



Service Manual

**MODEL: GWH09RA-K3DNA1A
GWH12RB-K3DNA1A
(Refrigerant R410A)**

GREE ELECTRIC APPLIANCES, INC.OF ZHUHAI

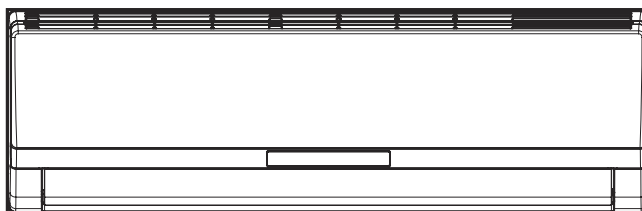
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Summary and features

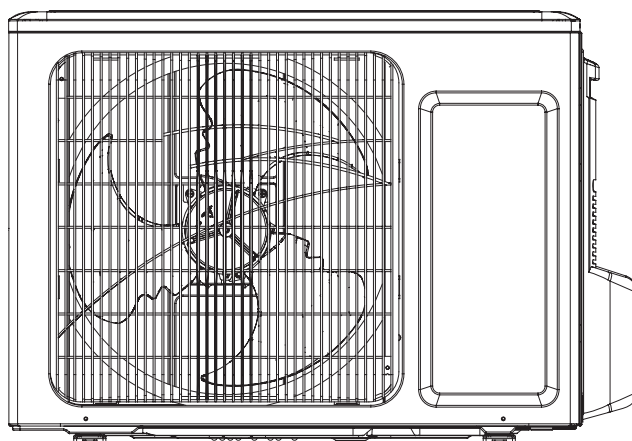
Indoor Unit

GWH09RA-K3DNA1A/I
GWH12RB-K3DNA1A/I

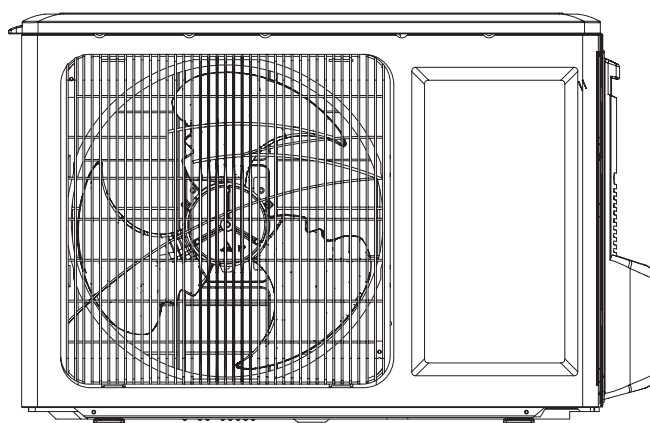


Outdoor Unit

GWH09RA-K3DNA1A/O



GWH12RB-K3DNA1A/O



Remote control

YAA1FB



1.Safety Precautions

Installing, starting up, and servicing air conditioner can be hazardous due to system pressure, electrical components, and equipment location, etc.

Only trained, qualified installers and service personnel are allowed to install, start-up, and service this equipment. Untrained personnel can perform basic maintenance functions such as cleaning coils. All other operations should be performed by trained service personnel.

When handling the equipment, observe precautions in the manual and on tags, stickers, and labels attached to the equipment. Follow all safety codes. Wear safety glasses and work gloves. Keep quenching cloth and fire extinguisher nearby when brazing.

Read the instructions thoroughly and follow all warnings or cautions in literature and attached to the unit. Consult local building codes and current editions of national as well as local electrical codes.

Recognize the following safety information:



Warning

Incorrect handling could result in personal injury or death.



Caution

Incorrect handling may result in minor injury, or damage to product or property.

- Make sure the outdoor unit is installed on a stable, level surface with no accumulation of snow, leaves, or trash beside.
- Make sure the ceiling/wall is strong enough to bear the weight of the unit.
- Make sure the noise of the outdoor unit does not disturb neighbors.
- Follow all the installation instructions to minimize the risk of damage from earthquakes, typhoons or strong winds.
- Avoid contact between refrigerant and fire as it generates poisonous gas.
- Apply specified refrigerant only. Never have it mixed with any other refrigerant. Never have air remain in the refrigerant line as it may lead to rupture and other hazards.
- Make sure no refrigerant gas is leaking out when installation is completed.
- Should there be refrigerant leakage, the density of refrigerant in the air shall in no way exceed its limited value, or it may lead to explosion.
- Keep your fingers and clothing away from any moving parts.
- Clear the site after installation. Make sure no foreign objects are left in the unit.
- Always ensure effective grounding for the unit.



Warning

All electric work must be performed by a licensed technician according to local regulations and the instructions given in this manual.

- Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag switch with a suitable warning label.
- Never supply power to the unit unless all wiring and tubing are completed, reconnected and checked.
- This system adopts highly dangerous electrical voltage. Incorrect connection or inadequate grounding can cause personal injury or death. Stick to the wiring diagram and all the instructions when wiring.
- Have the unit adequately grounded in accordance with local electrical codes.
- Have all wiring connected tightly. Loose connection may lead to overheating and a possible fire hazard.

All installation or repair work shall be performed by your dealer or a specialized subcontractor as there is the risk of fire, electric shock, explosion or injury.



Caution

- Never install the unit in a place where a combustible gas might leak, or it may lead to fire or explosion.
- Make a proper provision against noise when the unit is installed at a telecommunication center or hospital.
- Provide an electric leak breaker when it is installed in a watery place.
- Never wash the unit with water.
- Handle unit transportation with care. The unit should not be carried by only one person if it is more than 20kg.
- Never touch the heat exchanger fins with bare hands.
- Never touch the compressor or refrigerant piping without wearing glove.
- Do not have the unit operate without air filter.
- Should any emergency occur, stop the unit and disconnect the power immediately.
- Properly insulate any tubing running inside the room to prevent the water from damaging the wall.

2.Specifications

2.1 Unit Specifications

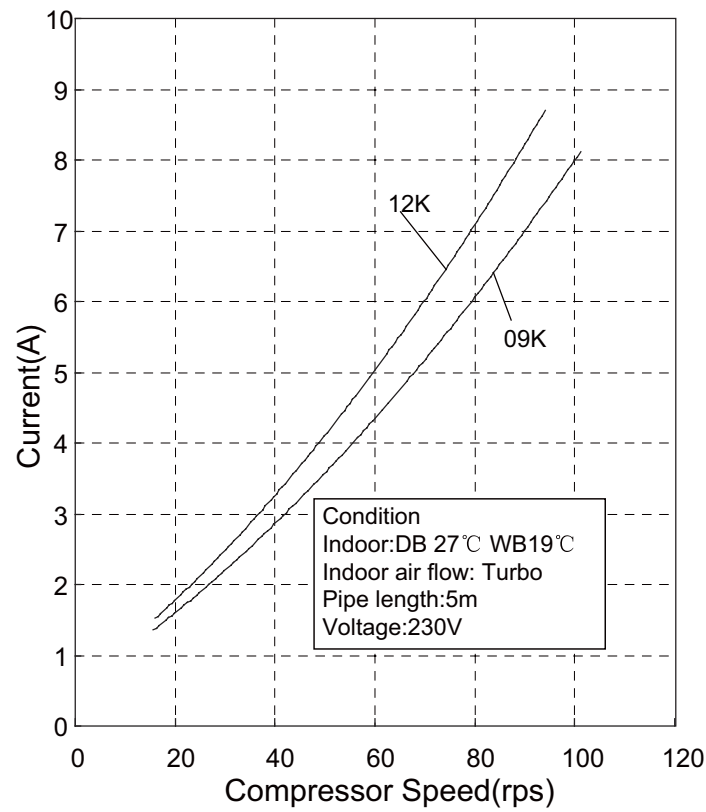
Parameter		Unit	Value	
Model			GWH09RA-K3DNA1A	GWH12RB-K3DNA1A
Product Code			CB14400020	CB14400030
Power Supply	Rated Voltage	V~	220-240	220-240
	Rated Frequency	Hz	50	50
	Phases		1	1
Power Supply Mode			Indoor	Indoor
Cooling Capacity (Min~Max)		W	2500(500~3200)	3500(950~4000)
Heating Capacity (Min~Max)		W	2750(800~3500)	3750(880~4300)
Cooling Power Input (Min~Max)		W	623 (280-1200)	960(350~1250)
Heating Power Input (Min~Max)		W	669 (310-1350)	1010(340~1360)
Cooling Power Current		A	2.72	4.50
Heating Power Current		A	2.91	4.60
Rated Input		W	1350	1300
Rated Current		A	5.88	6.00
Air Flow Volume(SH/H/M/L/SL)		m ³ /h	600/500/400/300/-	600/500/400/300/-
Dehumidifying Volume		L/h	0.8	1.4
EER		W/W	4.01	3.64
COP		W/W	4.11	3.71
SEER		W/W	/	/
HSPF		W/W	/	/
Application Area		m ²	12-18	16-24
Indoor Unit	Model of indoor unit		GWH09RA-K3DNA1A/I	GWH12RB-K3DNA1A/I
	Fan Type		Cross-flow	Cross-flow
	Diameter Length(DXL)	mm	Φ92X645	Φ92X645
	Fan Motor Cooling Speed (SH/H/M/L/SL)	r/min	1260/1070/900/730/-	1290/1070/900/690/-
	Fan Motor Heating Speed (SH/H/M/L/SL)	r/min	1280/1050/980/920/-	1280/1050/980/920/-
	Output of Fan Motor	W	20	20
	Fan Motor RLA	A	0.10	0.10
	Fan Motor Capacitor	μF	1.0	1.0
	Input of Heater	W	/	/
	Evaporator Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7	Φ7
	Row-fin Gap	mm	2-1.4	2-1.4
	Coil Length (LXDXW)	mm	690X24.8X266.7	690X24.8X266.7
	Swing Motor Model		MP24AA	MP24AA
	Output of Swing Motor	W	2	2
	Fuse	A	3.15	3.15
	Sound Pressure Level (SH/H/M/L/SL)	dB (A)	41/38/35/32/-	42/39/36/33/-
	Sound Power Level (SH/H/M/L/SL)	dB (A)	51/48/45/42/-	52/49/46/43/-
	Dimension (WXHXD)	mm	845X275X180	845X275X180
	Dimension of Carton Box (L/W/H)	mm	923X264X356	923X264X356
	Dimension of Package (L/W/H)	mm	926X267X371	926X267X371
	Net Weight	kg	10	10
	Gross Weight	kg	13	13

Outdoor Unit	Model of Outdoor Unit		GWH09RA-K3DNA1A/O	GWH12RB-K3DNA1A/O
	Compressor Manufacturer/Trademark		ZHUHAI LANDA COMPRESSOR CO.,LTD./GREE	PANASONIC WANBAO COMPRESSOR (GUANGZHOU) CO.LTD/PANASONIC
	Compressor Model		QXA-A086zC190	5RS102ZJA21
	Compressor Oil		FVC68D	FV50S
	Compressor Type		Rotary	Rotary
	L.R.A.	A	25.00	25.00
	Compressor RLA	A	12.00	4.47
	Compressor Power Input	W	940	985
	Overload Protector		INT11L-6233	1NT11L-5270
	Throttling Method		Capillary	Capillary
	Operation temp	°C	16~30	16~30
	Ambient temp (cooling)	°C	18~43	18~43
	Ambient temp (heating)	°C	-7~24	-7~24
	Condenser Form		Aluminum Fin-copper Tube	Aluminum Fin-copper Tube
	Pipe Diameter	mm	Φ7	Φ7.94
	Rows-fin Gap	mm	2-1.4	2-1.4
	Coil Length (LXDXW)	mm	695X38.1X508	870X38X580
	Fan Motor Speed	rpm	830	660/900
	Output of Fan Motor	W	30	30
	Fan Motor RLA	A	0.30	0.15
	Fan Motor Capacitor	μF	/	/
	Air Flow Volume of Outdoor Unit	m ³ /h	1600	1800
	Fan Type		Axial-flow	Axial-flow
	Fan Diameter	mm	Φ400	Φ400
	Defrosting Method		Automatic Defrosting	Automatic Defrosting
	Climate Type		T1	T1
	Isolation		I	I
	Moisture Protection		IP24	IP24
	Permissible Excessive Operating Pressure for the Discharge Side	MPa	3.8	3.8
	Permissible Excessive Operating Pressure for the Suction Side	MPa	1.2	1.2
	Sound Pressure Level (H/M/L)	dB (A)	50/-/-	52/-/-
	Sound Power Level (H/M/L)	dB (A)	60/-/-	62/-/-
	Dimension (WXHXD)	mm	776X540X320	848X540X320
	Dimension of Carton Box (L/W/H)	mm	848X360X580	878X360X580
	Dimension of Package (L/W/H)	mm	851X363X595	881X363X595
	Net Weight	kg	29	36
	Gross Weight	kg	33	39
	Refrigerant		R410A	R410A
	Refrigerant Charge	kg	0.9	1.12
Connect on Pipe	Length	m	5	5
	Gas Additional Charge	g/m	30	50
	Outer Diameter Liquid Pipe	mm	Φ6	Φ6
	Outer Diameter Gas Pipe	mm	Φ9.52	Φ9.52
	Max Distance Height	m	10	10
	Max Distance Length	m	15	20

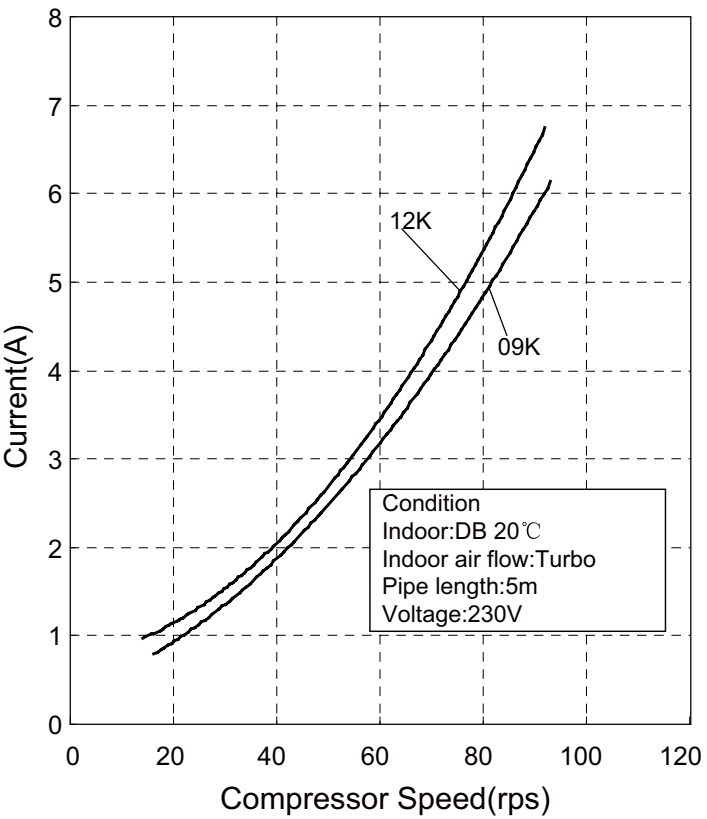
The above data is subject to change without notice. Please refer to the nameplate of the unit.

2.2 Operation Characteristic Curve

Cooling

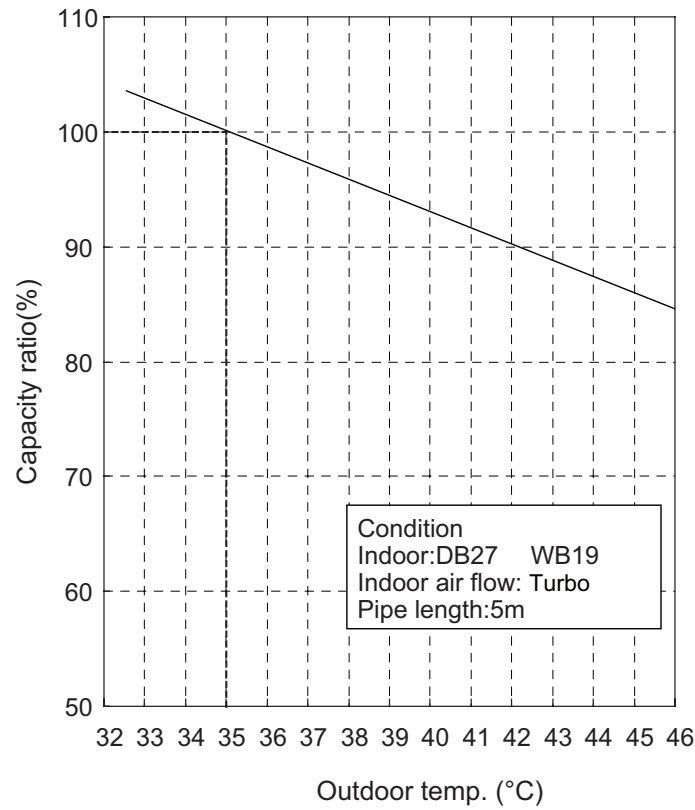


Heating

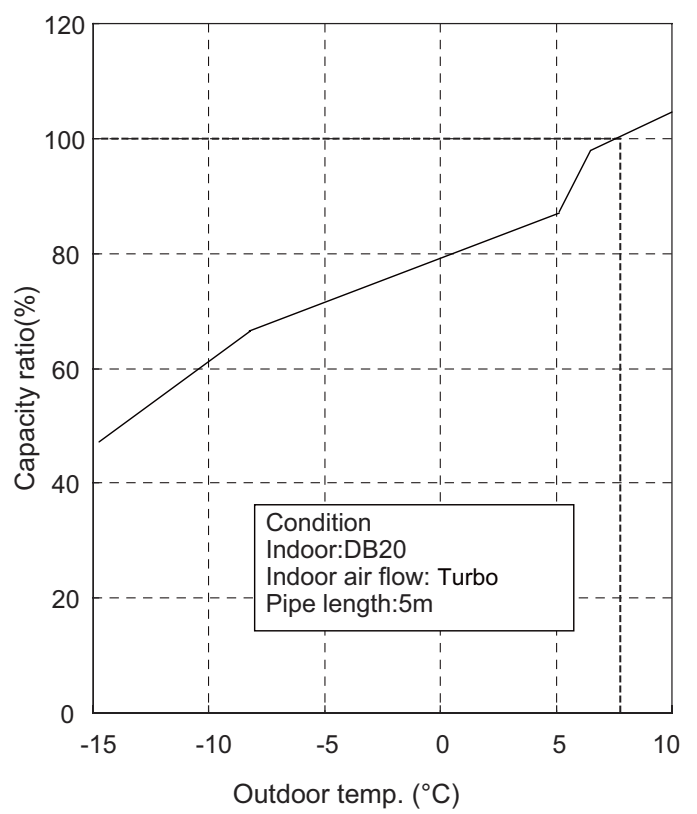


2.3 Capacity Variation Ratio According to Temperature

Cooling



Heating



2.4 Operation Data

Cooling

Temperature condition (°C)		Model name	Standard pressure P (MPa)	Heat exchanger pipe temp.		Indoor fan mode	Outdoor fan mode	Compressor revolution (rps)
Indoor	Outdoor			T1 (°C)	T2 (°C)			
27/19	35/24	09K	0.85~1.0	in:8~11 out:11~14	in:75~85 out:37~43	Turbo	830	54
		12K				Turbo	900	60

Heating

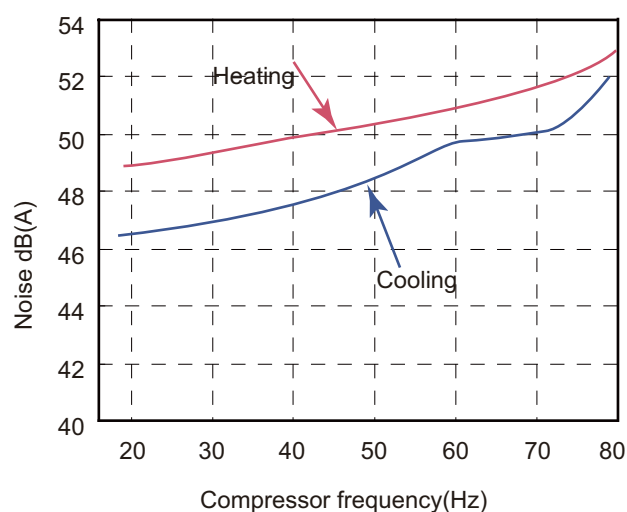
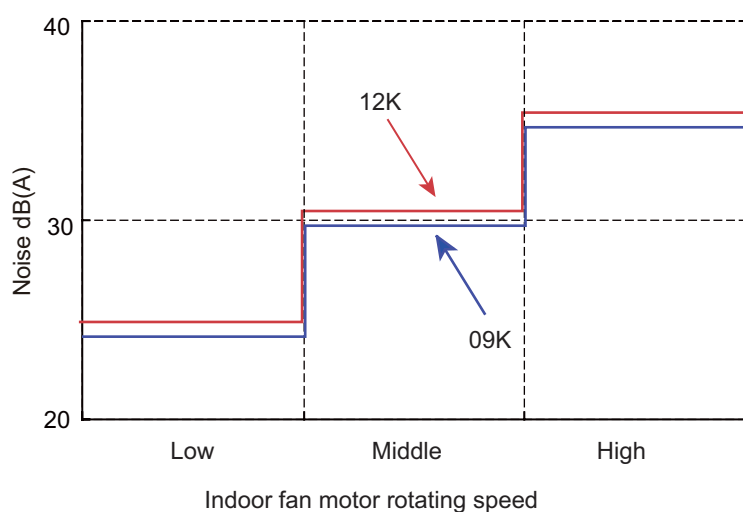
Temperature condition (°C)		Model name	Standard pressure P (MPa)	Heat exchanger pipe temp.		Indoor fan mode	Outdoor fan mode	Compressor revolution (rps)
Indoor	Outdoor			T1 (°C)	T2 (°C)			
20/-	7/6	09K	2.5~3.0	in:75~85 out:37~43	in:1~3 out:2~5	Turbo	830	62
		12K				Turbo	900	66

NOTES :

- (1) T1: Inlet and outlet pipes temperatures of evaporator; T2: Inlet and outlet pipes temperatures of condenser; P: Pressure of gas pipe which connects indoor unit to outdoor unit (on the gas valve side).
- (2) Measure surface temperature of heat exchanger pipe around center of heat exchanger path U bent. (Thermistor thermometer)
- (3) Connecting piping condition : 5 m

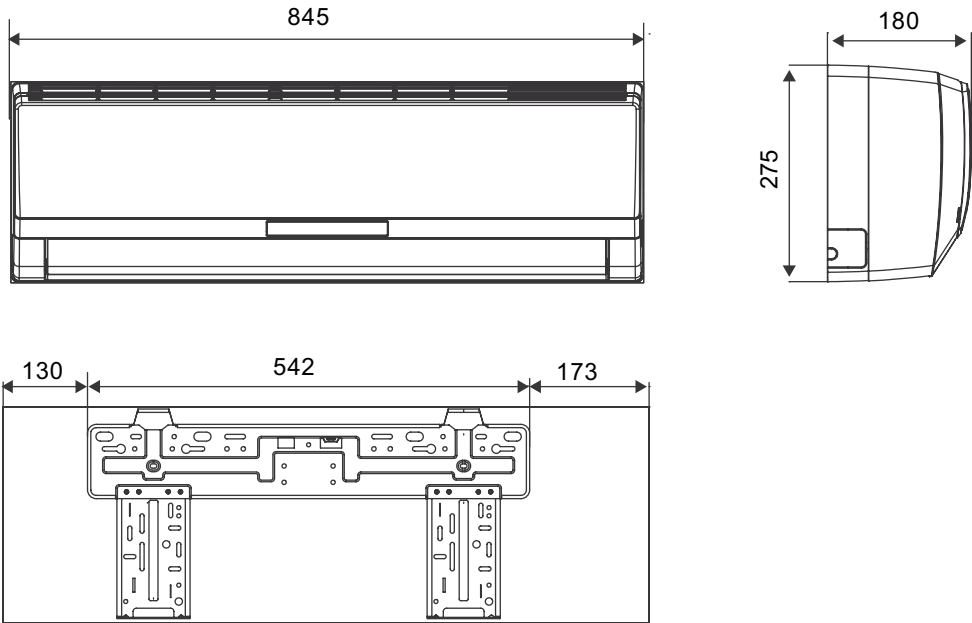
2.5 Noise Criteria Curve Tables for Both Models

Indoor side noise when blowing



3. Construction Views

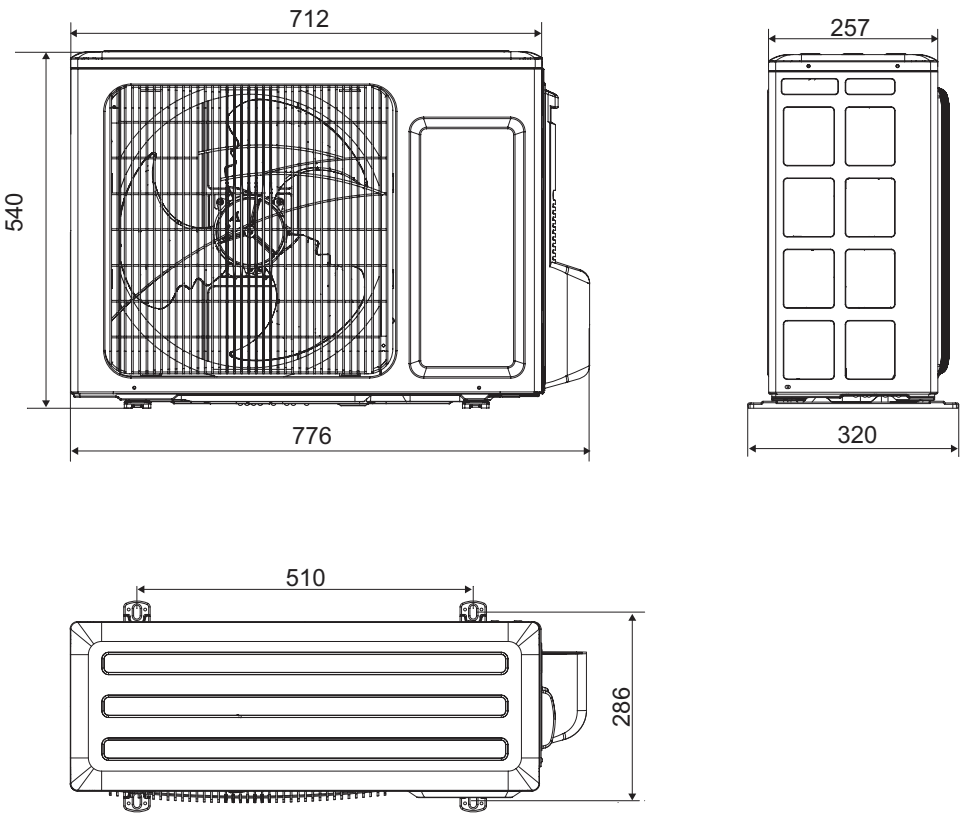
3.1 Indoor Unit



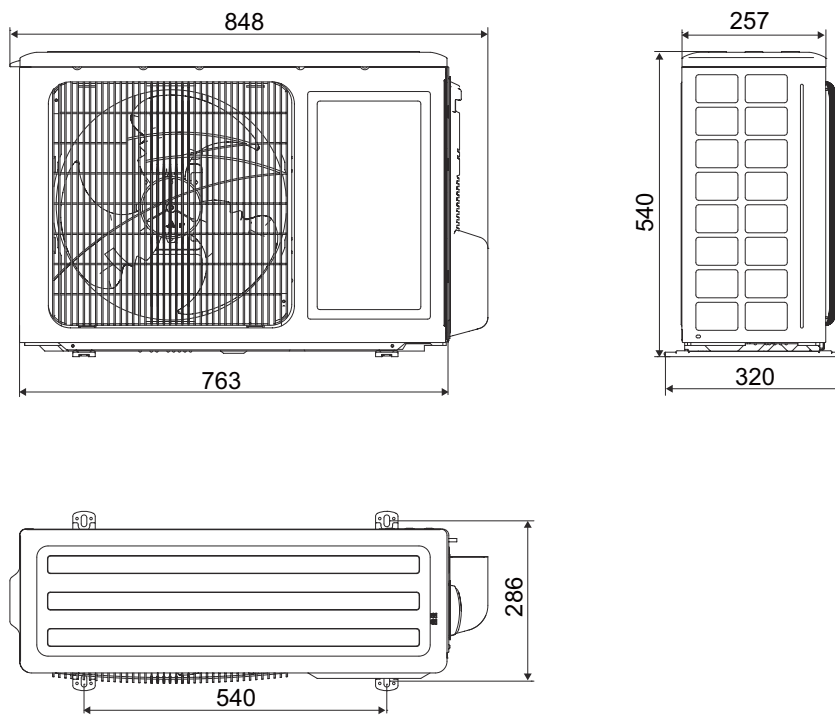
3.2 Outdoor Unit

Unit:mm

09K Unit

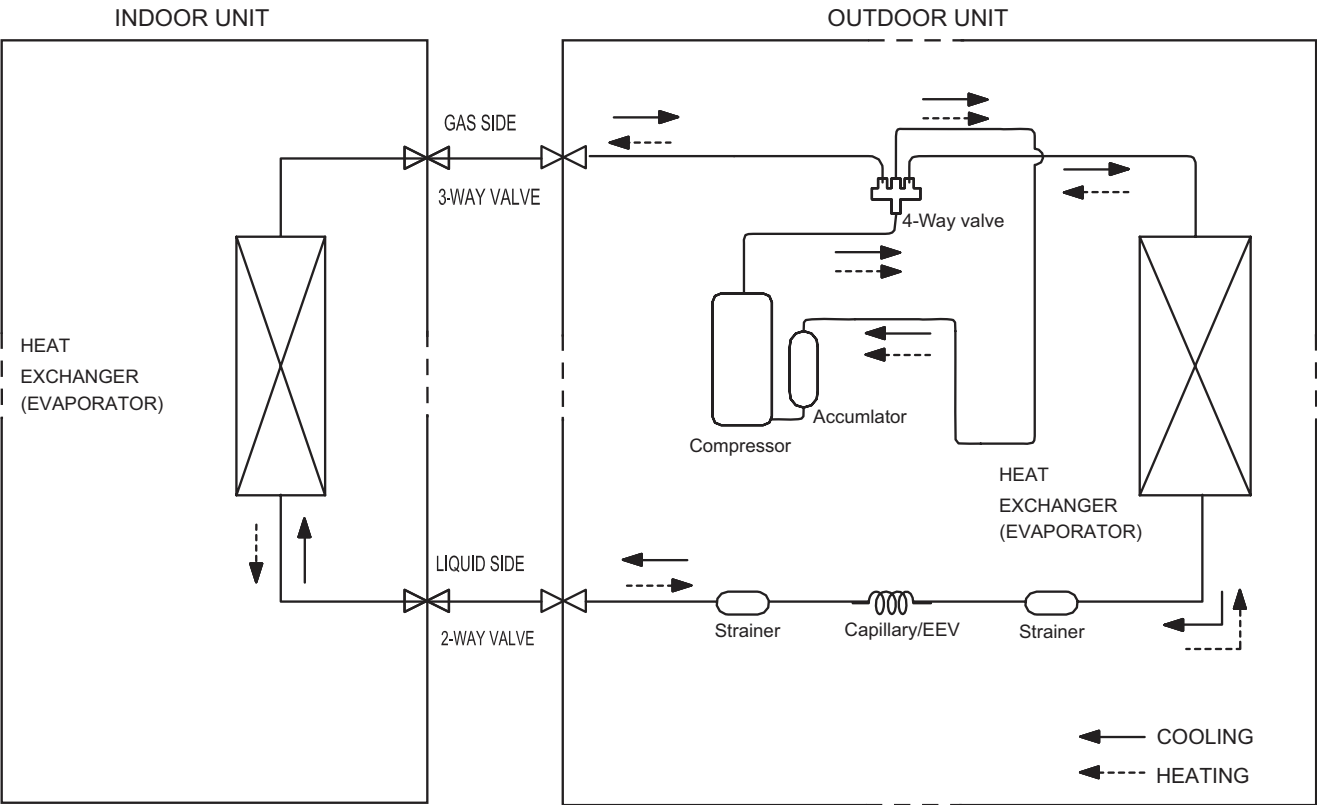


12K Unit



Unit:mm

4. Refrigerant System Diagram




Refrigerant pipe diameter
Liquid : 1/4" (6 mm)
Gas : 3/8" (9.52mm)

5. Schematic Diagram


5.1 Electrical Data

Meaning of marks

● Indoor Unit

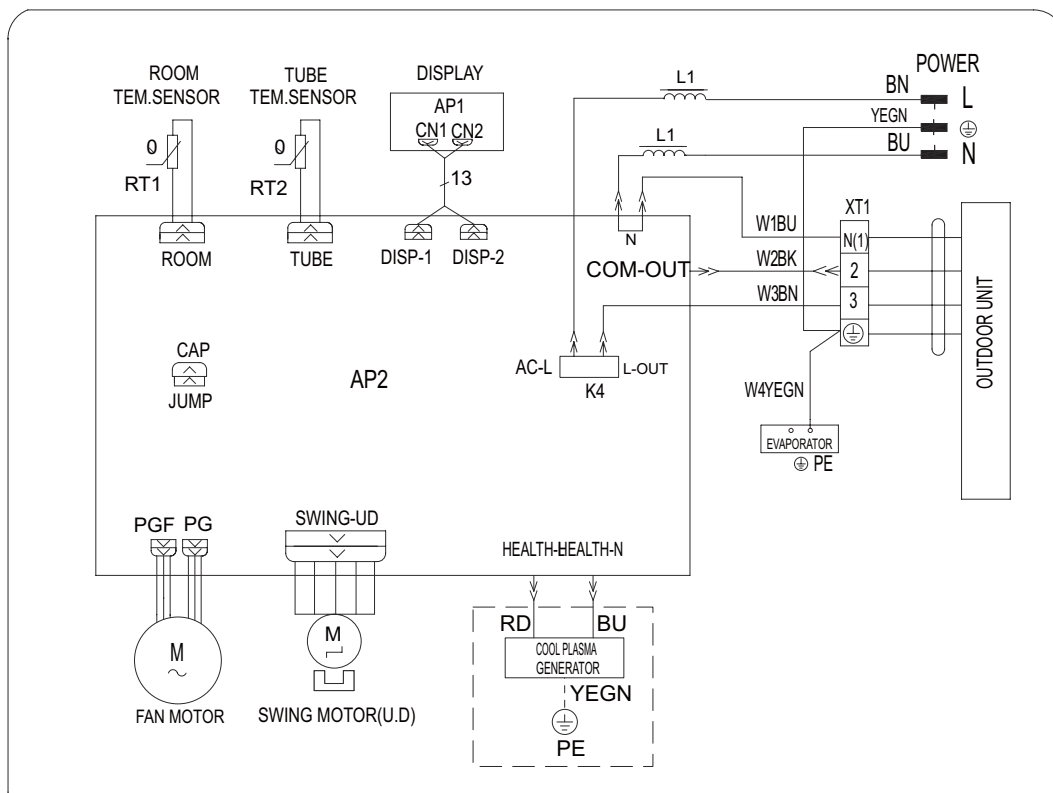
Symbol	Color symbol	Symbol	Color symbol
BN	BROWN	BU	BLUE
RD	RED	BK	BLACK
YEGN	YELLOW GREEN		PROTECTIVE EARTH

● Outdoor Unit

Symbol	Parts name	Symbol	Color symbol	Symbol	Color symbol
CT 1,2	OVERLOAD	YE	YELLOW	YEGN	YELLOW GREEN
COMP	COMPRESSOR	RD	RED	BU	BLUE
	PROTECTIVE EARTH	BN	BROWN	BK	BLACK

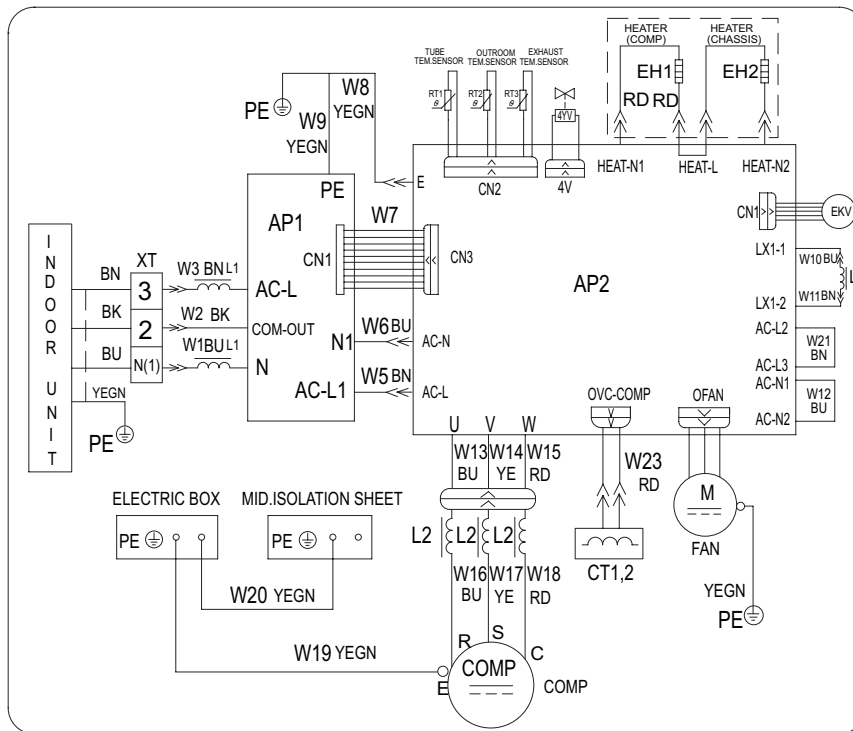
5.2 Electrical wiring

● Indoor Unit

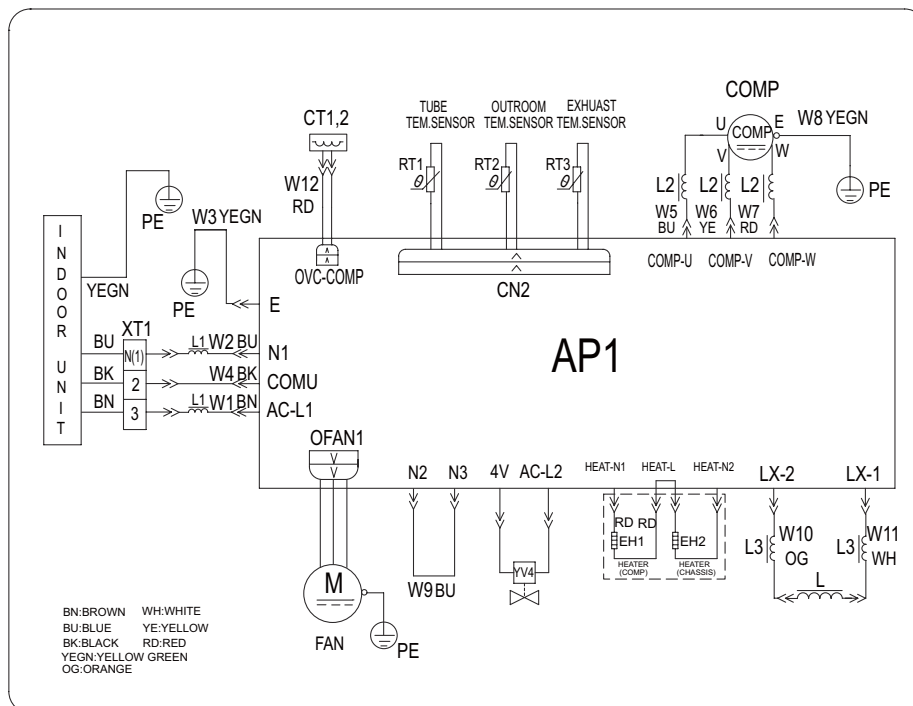


● Outdoor Unit

09K Unit



12K Unit

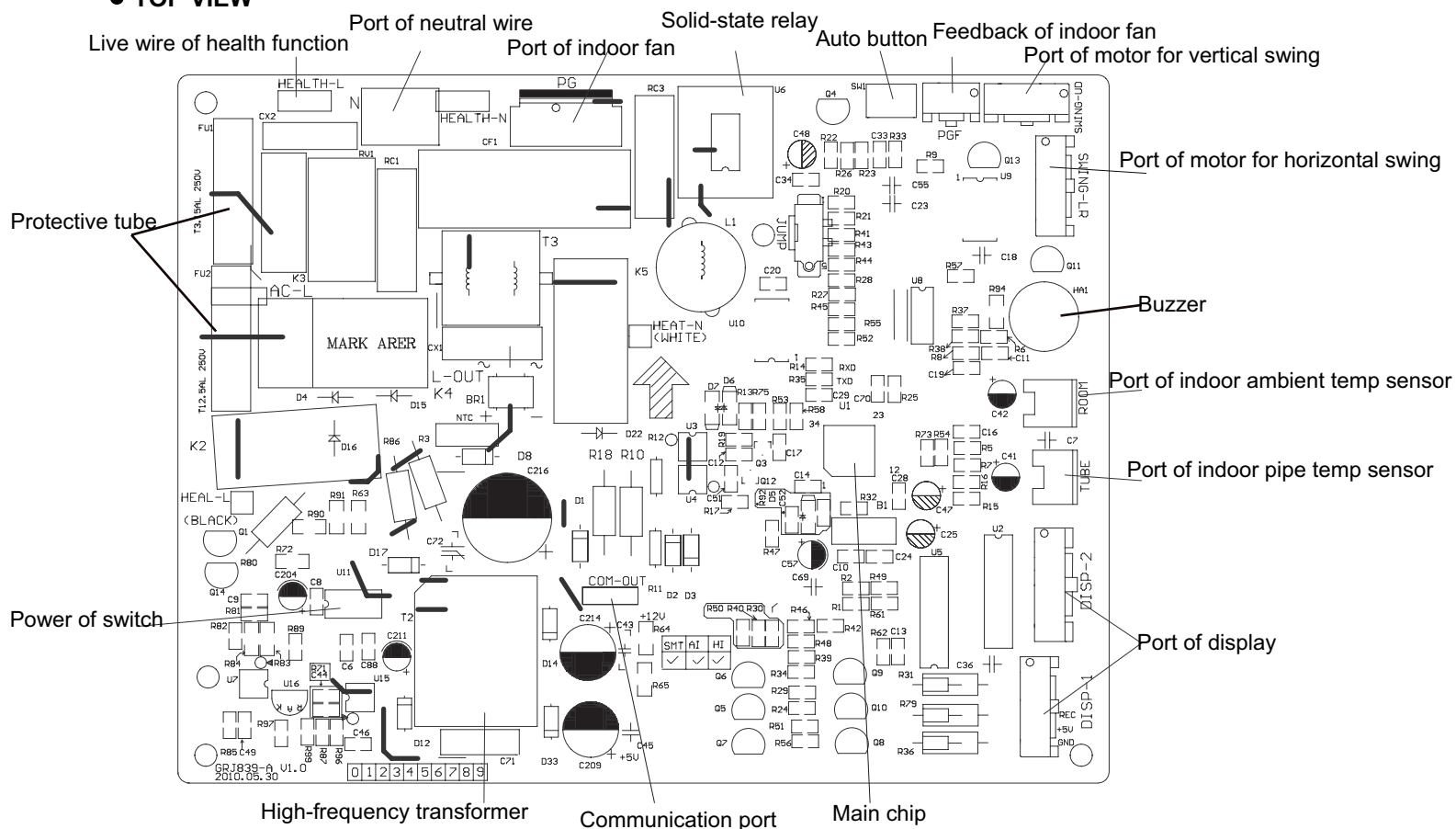


These circuit diagrams are subject to change without notice. Please refer to the one supplied with the unit.

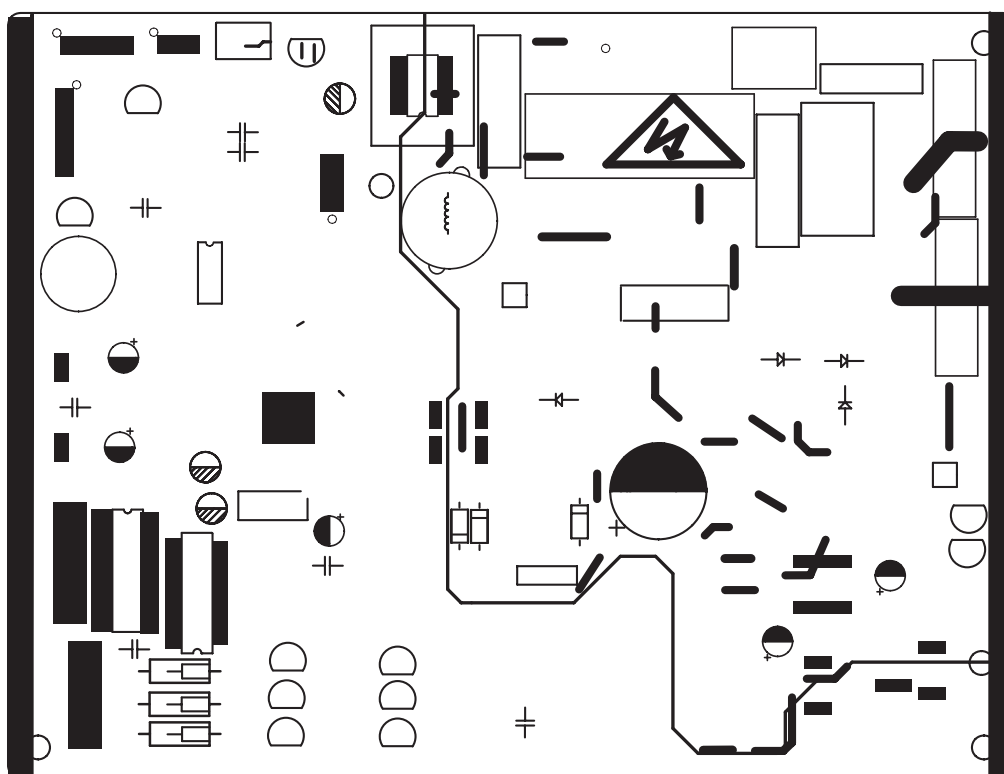
5.3 Printed Circuit Board

(1) Indoor unit

● TOP VIEW



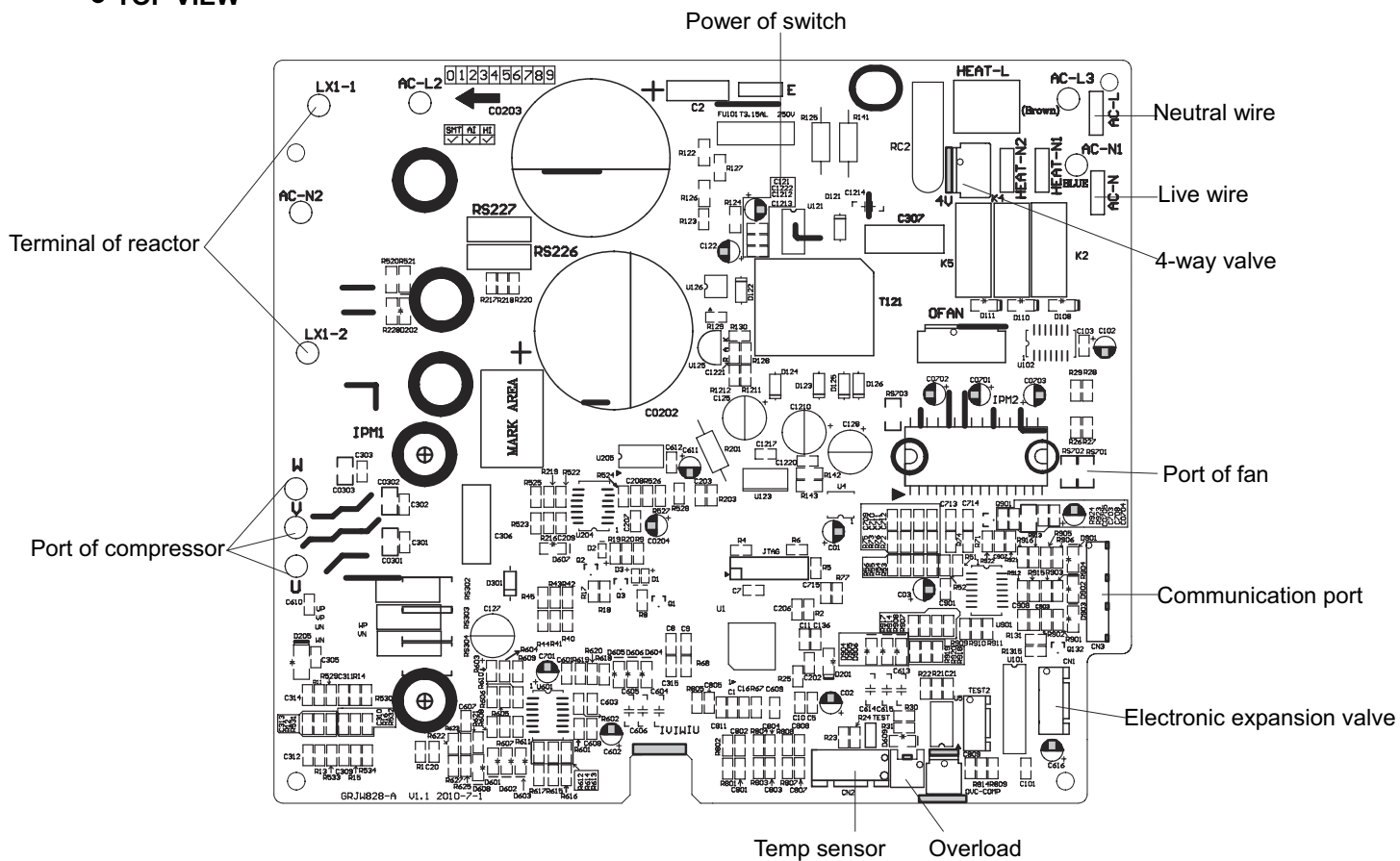
● BOTTOM VIEW



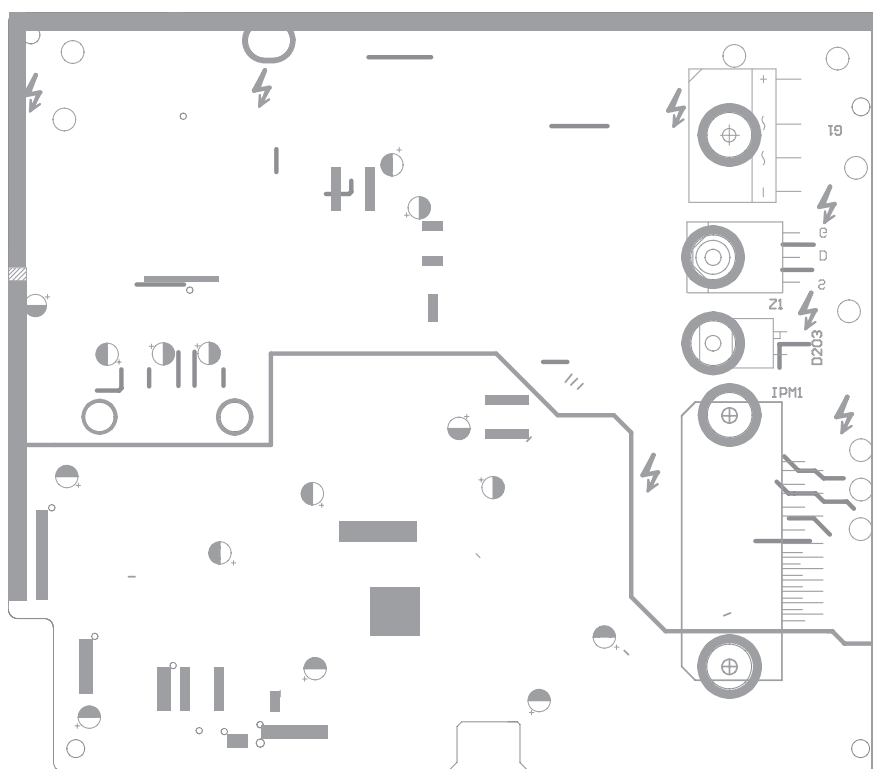
(2) Outdoor unit

09K Unit

● TOP VIEW

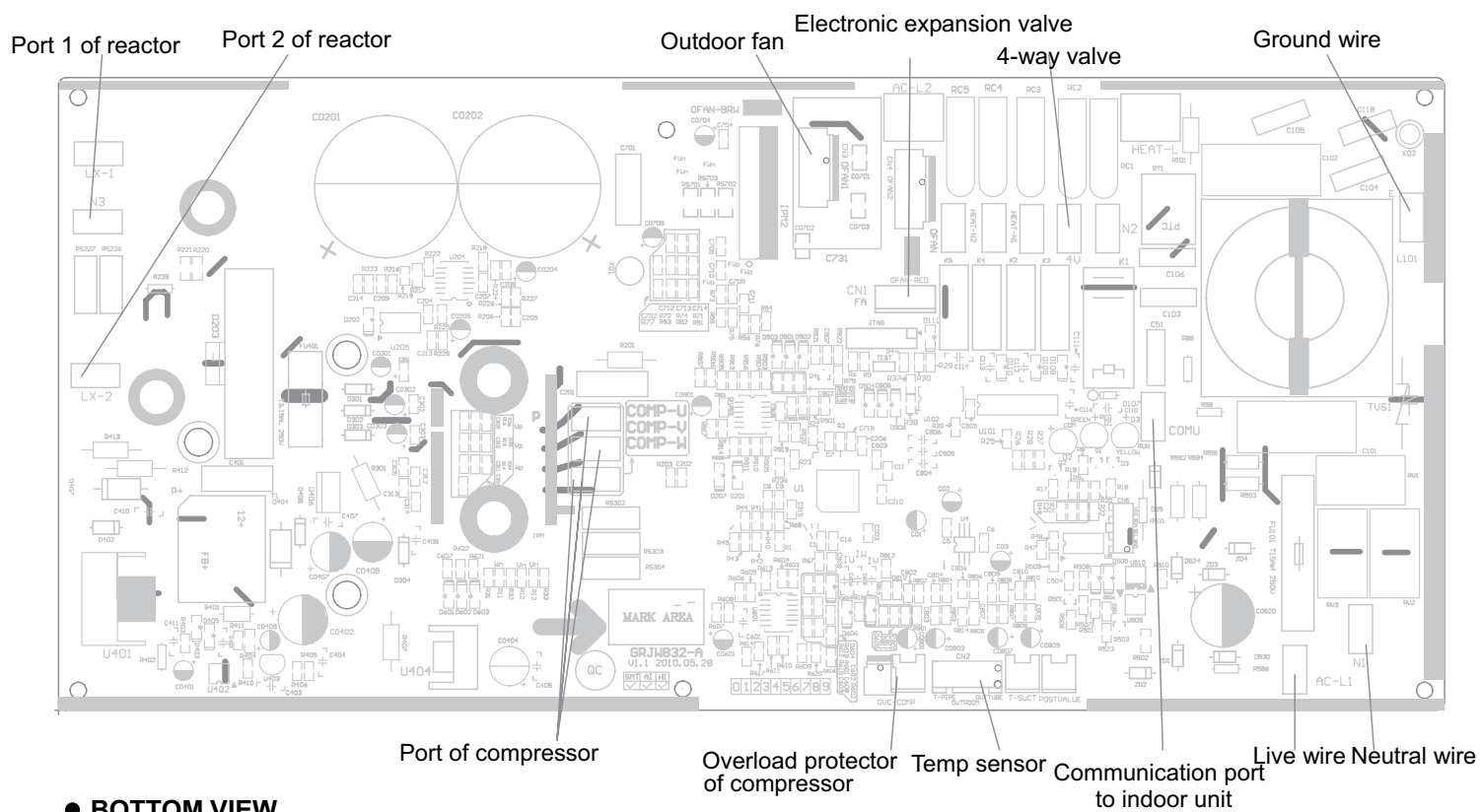


● BOTTOM VIEW

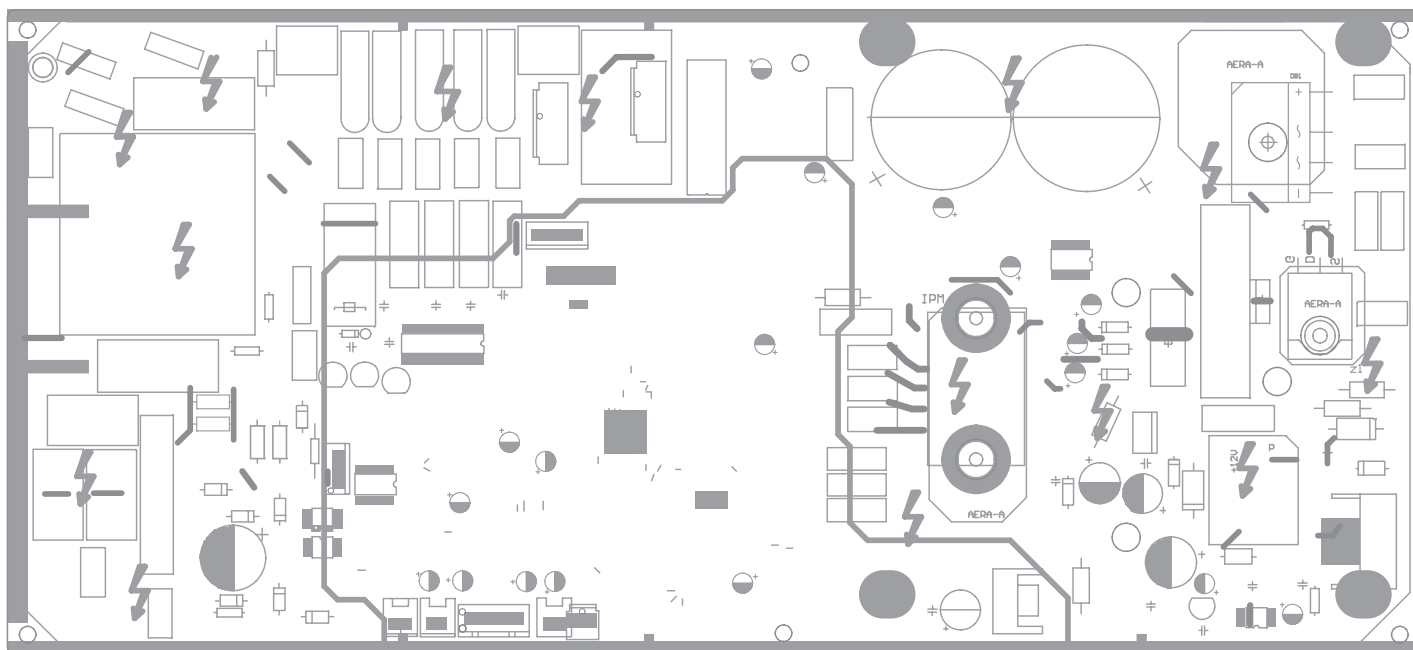


12K Unit

● TOP VIEW

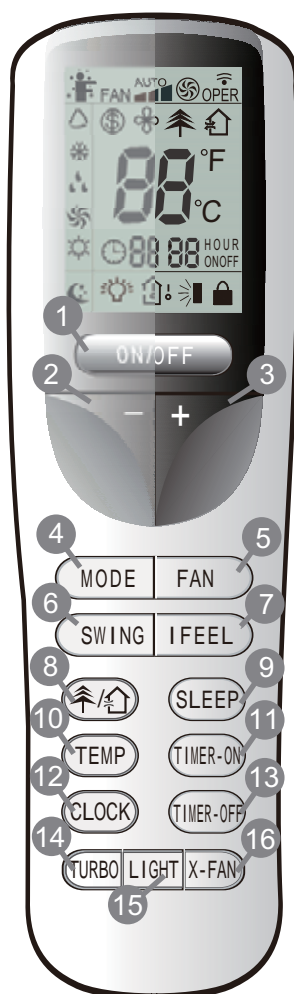




● BOTTOM VIEW

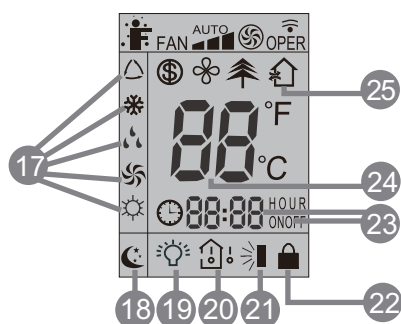


6. Function and Control






6.1 Remote Controller Description



- 1 ON/OFF Button
- 2 Set point Temperature DOWN Button
- 3 Set point Temperature UP Button
- 4 MODE Button
- 5 FAN Speed Button
- 6 SWING Button;
- 7 I FEEL Button
- 8  
- 9 Sleep Mode Button
- 10 Temperature Display Button
- 11 TIMER ON Button
- 12 Clock Button
- 13 TIMER OFF Button
- 14 TURBO Button
- 15 Light Mode Button
- 16 X-FAN Button




17 MODE icon:

If MODE button is pressed, current operation mode icon  (AUTO),  (COOL),  (DRY),  (FAN) or  (HEAT only for heat pump models) will show.




18 SLEEP icon :

 is displayed by pressing the SLEEP button. Press this button again to clear the display.

19 LIGHT icon:

 is displayed by pressing the LIGHT button. Press LIGHT button again to clear the display.


20 TEMP icon:

Pressing TEMP button,  (set temperature),  (indoor ambient temperature),  (outdoor ambient temperature) and blank is displayed circularly.

21 Up & down swing icon:

 is displayed when pressing the up & down swing down button. Press this button again to clear the display.

22 LOCK icon:

 is displayed by pressing "+" and "-" buttons simultaneously. Press them again to clear the display.


23 SET TIME display:

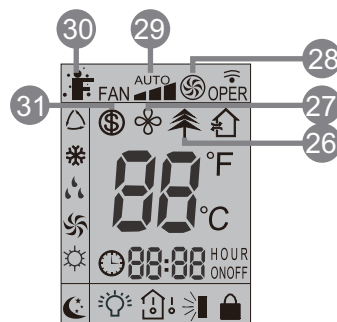
After pressing TIMER button, HOUR ON or OFF will blink. This area will show the set time.

24 DIGITAL display:

This area will show the set temperature. In SAVE mode, "SE" will be displayed.

25 AIR icon:

 is displayed when pressing the AIR button. Press this button again to clear the display.

**26 HEALTH icon:**

 is displayed when pressing the HEALTH button. Press this button again to clear the display.

27 X-FAN icon:

 is displayed when pressing the X-FAN button. Press this button again to clear the display.

28 TURBO icon:

 is displayed when pressing the TURBO button. Press this button again to clear the display.

29 FAN SPEED display:

Press FAN button to select the desired fan speed setting (AUTO-Low-Med-High). Your selection will be displayed in the LCD windows, except the AUTO fan speed.

30 I FEEL icon:

 is displayed when pressing the I FEEL button. Press this button again to clear the display.

31 8°C Heating icon:

 is displayed when Pressing "TEMP" and "CLOCK" simultaneously in Heat mode.

1 ON/OFF :

Press this button to turn on the unit .Press this button again to turn off the unit.

2 —:

Press this button to decrease set temperature. Holding it down above 2 seconds rapidly decreases set temperature. In AUTO mode, set temperature is not adjustable.

3 + :

Press this button to increase set temperature.Holding it down above 2 seconds rapidly increases set temperature. In AUTO mode, set temperature is not adjustable.

4 MODE :

Each time you press this button,a mode is selected in a sequence that goes from AUTO, COOL,DRY,FAN,,and HEAT *,as the following:

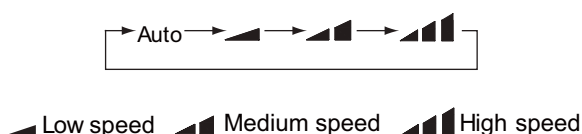


*Note:Only for models with heating function.

After energization, AUTO mode is defaulted. In AUTO mode, the set temperature will not be displayed on the LCD, and the unit will automatically select the suitable operation mode in accordance with the room temperature to make indoor room comfortable.

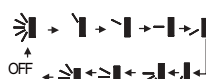
5 FAN:

This button is used for setting Fan Speed in the sequence that goes from AUTO, Low speed, Medium speed, High speed, then back to Auto.

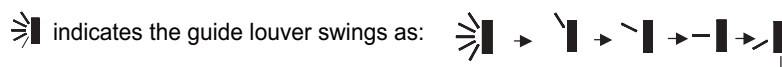


6 SWING:

Press this button to set up &down swing angle, which circularly changes as below:



This remote controller is universal . If any command is sent out,the unit will carry out the command as



7 IFEEL:

Press this button to turn on I FEEL function. The unit automatically adjust temperature according to the sensed temperature. Press this button again to cancel IFEEL function.




8

Press this button to achieve the on and off of healthy and scavenging functions in operation status. Press this button for the first time to start scavenging function; LCD displays "SC". Press the button for the second time to start healthy and scavenging functions simultaneously; LCD displays "SC" and "HE". Press this button for the third time to quit healthy and scavenging functions simultaneously. Press the button for the fourth time to start healthy function; LCD display "HE". Press this button again to repeat the operation above.

9 SLEEP:

Press this button to go into the SLEEP operation mode. Press it again to cancel this function. This function is available in COOL, HEAT (Only for models with heating function) or DRY mode to maintain the most comfortable temperature for you.


10 TEMP:

Pressing TEMP button,  (set temperature),  (indoor ambient temperature) and  (outdoor ambient temperature) and blank is displayed circularly. The unit defaults not to display the icon. During operation of TEMP button, the set temperature is always displayed.



Note: Outdoor ambient temperature is only displayed for some models.

11 TIMER ON:

Press this button to initiate the auto-ON timer. To cancel the auto-timer program, simply press this button again.

After press of this button,  disappears and "ON" blinks. 00:00 is displayed for ON time setting. Within 5 seconds, press + or - button to adjust the time value. Every press of either button changes the time setting by 1 minute. Holding down either button rapidly changes the time setting by 1 minute and then 10 minutes. Within 5 Seconds after setting, press TIMER ON button to confirm.

12 CLOCK:

Press CLOCK button,  blinking. Within 5 seconds, pressing + or - button adjusts the present time. Holding down either button above 2 seconds increases or decreases the time by 1 minute every 0.5 second and then by 10 minutes every 0.5 second. During blinking after setting, press CLOCK button again to confirm the setting, and then  will be constantly displayed.



13 TIMER OFF:

Press this button to initiate the auto-off timer. To cancel the auto-timer program, simply press the button again. TIMER OFF setting is the same as TIMER ON.


14 TURBO:

Press this button to activate / deactivate the Turbo function which enables the unit to reach the preset temperature in the shortest time. In COOL mode, the unit will blow strong cooling air at super high fan speed. In HEAT mode, the unit will blow strong heating air at super high fan speed.

15 LIGHT:



Press LIGHT button to turn on the display's light and press this button again to turn off the display's light. If the light is turned on,  is displayed. If the light is turned off,  disappears.

16 X-FAN:

Pressing X-FAN button in COOL or DRY mode, the icon  is displayed and the indoor fan will continue operation for 10 minutes in order to dry the indoor unit even though you have turned off the unit.

After energization, X-FAN OFF is defaulted. X-FAN is not available in AUTO, FAN or HEAT mode.

17 Combination of "+" and "-" buttons : About lock

Press "+" and "-" buttons simultaneously to lock or unlock the keypad. If the remote controller is locked,  is displayed. In this case, pressing any button,  blinks three times.

18 Combination of "MODE" and "-" buttons : About switch between Fahrenheit and centigrade

At unit OFF, press "MODE" and "-" buttons simultaneously to switch between °C and °F.

19 Combination of "TEMP" and "CLOCK" buttons : About Energy-saving Function

Press "TEMP" and "CLOCK" simultaneously in COOL mode to start energy-saving function. Nixie tube on the remote controller displays "SE". Repeat the operation to quit the function.

20 Combination of "TEMP" and "CLOCK" buttons : About 8 Heating Function Press "TEMP" and "CLOCK" simultaneously in HEAT mode to start 8 Heating Function Nixie tube on the remote controller displays "8" and a selected temperature of "8" (46°F if Fahrenheit is adopted). Repeat the operation to quit the function.

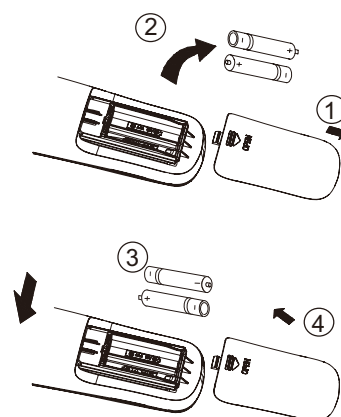
21 About Back-lighting Function
The unit lights for 4s when energizing for the first time, and 3s for later press.

6.2 Changing batteries and notices

- 1.Remove the battery cover plate from the rear of the remote controller.
(As shown in the figure)
- 2.Take out the used batteries.
- 3.Insert two new AAA1.5V dry batteries, and pay attention to the polarity.
4. Reinstall the battery cover plate.

★ Notes:

- ☐ When replacing the batteries, do not use used or different types of batteries, otherwise, it may cause malfunction.
- ☐ If the remote controller will not be used for a long time, please remove batteries to prevent batteries from leaking.
- ☐ The operation should be performed in its receiving range.
- ☐ It should be kept 1m away from the TV set or stereo sound sets.
- ☐ If the remote controller does not operate normally, please take the batteries out and reinsert them after 30 seconds.If it still can't operate properly, replace the batteries.



Sketch map for replacing batteries

6.3 Description of Each Control Operation

1. Temperature Parameters

- ◆ Indoor preset temperature (T_{preset})
- ◆ Indoor ambient temperature ($T_{\text{amb.}}$)

2. Basic Functions

Once energized, in no case should the compressor be restarted within less than 3 minutes. In the situation that memory function is available, for the first energization, if the compressor is at stop before de-energization, the compressor will be started without a 3-minute lag; if the compressor is in operation before de-energization, the compressor will be started with a 3-minute lag; and once started, the compressor will not be stopped within 6 minutes regardless of changes in room temperature;

(1) COOL mode

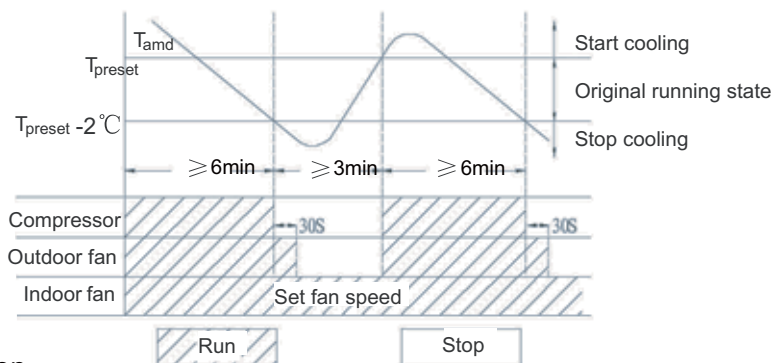
① The condition and process of cooling

If $T_{\text{amb}} \geq T_{\text{preset}}$ COOL mode will act, the compressor and outdoor fan will run, and the indoor fan will run at the set speed.

If $T_{\text{amb}} \leq T_{\text{preset}} - 2^\circ\text{C}$, the compressor will stop, the outdoor fan will delay 30 seconds to stop, and the indoor fan will run at the set speed.

If $T_{\text{preset}} - 2^\circ\text{C} \leq T_{\text{amb}} \leq T_{\text{preset}}$, the unit will keep running in the previous mode.

In this mode, the reversal valve will not be powered on and the temperature setting range is $16^\circ\text{C} \sim 30^\circ\text{C}$.



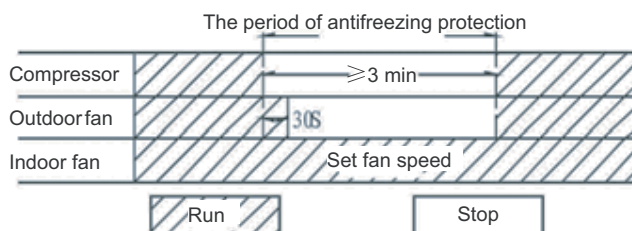
② Protection function

◆ Overcurrent protection

If total current is high, the compressor will run in limited frequency. If total current is too high, the compressor will stop, the outdoor fan will delay 30 seconds to stop, indoor unit will display E5 and outdoor yellow light will blink 5 times.

◆ Antifreezing protection

When the antifreezing protection is detected, the compressor will stop, the outdoor fan will stop after 30 seconds, and the indoor fan and swing motor will keep running in the original mode. When antifreezing protection is eliminated and the compressor has stopped for 3 minutes, the compressor will resume running in the original mode.



(2) Dehumidifying Mode

① Working conditions and process of dehumidifying

If $T_{\text{amb.}} > T_{\text{preset}}$ the unit will enter cooling and dehumidifying mode, in which case the compressor and the outdoor fan will operate and the indoor fan will run at low speed.

If $T_{\text{preset}} - 2^\circ\text{C} \leq T_{\text{amb.}} \leq T_{\text{preset}}$ the compressor remains at its original operation state.

If $T_{\text{amb.}} < T_{\text{preset}} - 2^\circ\text{C}$, the compressor will stop, the outdoor fan will stop with a time lag of 30s, and the indoor fan will operate at low speed.

② Protection

Protection is the same as that under the cooling mode.

(3) HEAT mode

① The condition and process of heating

If $T_{amb} \leq T_{preset} + 2^{\circ}\text{C}$, HEAT mode will act, the compressor, outdoor fan and reversal valve will run, the indoor fan will delay 3min to stop at the latest

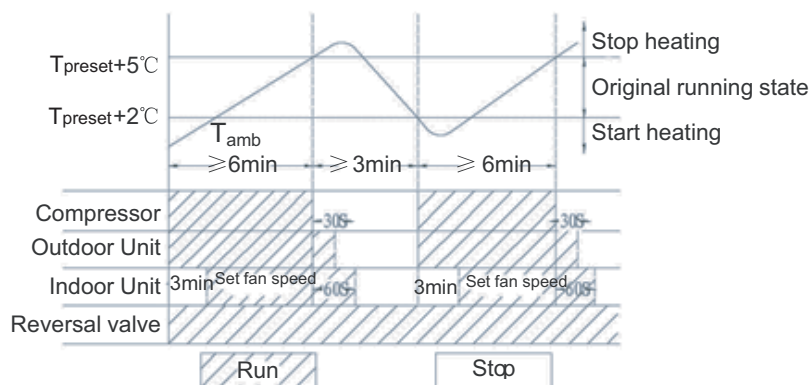
If $T_{preset} + 2^{\circ}\text{C} < T_{amb} < T_{preset} + 5^{\circ}\text{C}$, the unit will keep running in the original mode.

If $T_{amb} \geq T_{preset} + 5^{\circ}\text{C}$, the compressor will stop, the outdoor fan will delay 30sec to stop and indoor fan will blow 60S at low speed, the fan speed cannot be shifted within blow residual heat.

➤ In this mode, the temperature setting range is $16^{\circ}\text{C} \sim 30^{\circ}\text{C}$.

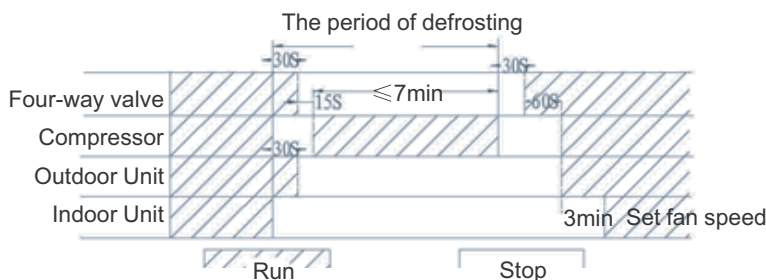
➤ The air conditioner will adjust the running frequency of the compressor automatically according to the change of ambient temperature.

➤ When the unit is turned off in HEAT mode, or switched to other mode from HEAT mode, the four-way valve will be powered off after the compressor stops.



② The condition and process of defrosting

When frost is detected in the condenser, the system will enter into defrosting state. When defrosting starts, the compressor and indoor fan will stop, and the outdoor fan and four-way valve will delay 30 seconds to stop. The compressor will start after 15 seconds and then defrosting will be started. When the compressor has run for 7 minutes or defrosting is finished, the compressor will stop. After 30 seconds the four-way valve opens and after another 60 seconds, the compressor and outdoor fan resume running. The indoor fan will delay 3 minutes to run at the latest and temperature on the display panel shows H1.



③ Protection function

Anti-cold-wind protection

In HEAT mode, in order to prevent the indoor unit from blowing out cold wind, each time the compressor starts, the indoor fan will delay 3 minutes after the compressor to run at the latest and it can adjust fan speed automatically when temperature is low.

Overcurrent protection

Overcurrent protection is the same with that in COOL mode.

3. Protection

◆ Cold air prevention

The unit is started under heating mode (the compressor is ON):

① In the case of $T_{indoor\ amb.} < 24^{\circ}\text{C}$: if $T_{tube} \leq 40^{\circ}\text{C}$ and the indoor fan is at stop state, the indoor fan will begin to run at low speed with a time lag of 2 minutes. Within 2 minutes, if $T_{tube} > 40^{\circ}\text{C}$, the indoor fan also will run at low speed; and after 1-minute operation at low speed, the indoor fan will be converted to operation at preset speed. Within 1-minute low speed operation or 2-minute non-operation, if $T_{tube} > 42^{\circ}\text{C}$, the fan will run at present speed.

② In the case of $T_{indoor\ amb.} \geq 24^{\circ}\text{C}$: if $T_{tube} \leq 42^{\circ}\text{C}$, the indoor fan will run at low speed, and after one minute, the indoor fan will be converted to preset speed. Within one-minute low speed operation, if $T_{tube} > 42^{\circ}\text{C}$, the indoor fan will be converted to preset speed.

Note: $T_{\text{indoor amb}}$ indicated in 1 and 2 refers to, under initially heating mode, the indoor ambient temperature before the command to start the compressor is performed according to the program, or after the unit is withdrawn from defrost, the indoor ambient temperature before the defrost symbol is cleared.

◆ Total current up and frequency down protection

If the total current $I_{\text{total}} \leq W$, frequency rise will be allowed; if $I_{\text{total}} \geq X$, frequency rise will not be allowed; if $I_{\text{total}} \geq Y$, the compressor will run at reduced frequency; and if $I_{\text{total}} \geq Z$, the compressor will stop and the outdoor fan will stop with a time lag of 30s.

(4) Fan Mode

Under the mode, the indoor fan will run at preset speed and the compressor, the outdoor fan, the four-way valve and the electric heater will stop.

➤ Under the mode, temperature can be set within a range of 16 - 30°C.

(5) AUTO Mode

- When $T_{\text{amb}} \geq 26^\circ\text{C}$, the unit will operate at Cooling mode. In that case, the set temperature will be 25°C .
- When $T_{\text{amb}} \leq 22^\circ\text{C}$, the heat pump unit will operate at Heating mode. In that case, the set temperature will be 20°C ; the cooling-only unit will operate at Fan mode and the set temperature will be 25°C .
- When $23^\circ\text{C} \leq T_{\text{amb}} \leq 25^\circ\text{C}$, the unit will keep its operation status but if it is firstly energized, the unit will operate at Fan mode.
- When unit operates at Auto mode, the frequency of compressor will be the same as that in Cooling mode if the unit is cooling while it will be the same as that in the Heating mode if the unit is heating.

2. Protection

- In cooling operation, protection is the same as that under the cooling mode;
- In heating operation, protection is the same as that under the heating mode;
- When ambient temperature changes, operation mode will be converted preferentially. Once started, the compressor will remain unchanged for at least 6 minutes.

(6) Common Protection Functions and Fault Display under COOL, HEAT, DRY and AUTO Modes

① Overload protection

T_{tube} : measured temperature of outdoor heat exchanger under cooling mode; and measured temperature of indoor heat exchanger under heating mode.

1) Cooling overload

- If $T_{\text{tube}} \leq 52^\circ\text{C}$, the unit will return to its original operation state.
- If $T_{\text{tube}} \geq 55^\circ\text{C}$, frequency rise is not allowed.
- If $T_{\text{tube}} \geq 58^\circ\text{C}$, the compressor will run at reduced frequency.
- If $T_{\text{tube}} \geq 62^\circ\text{C}$, the compressor will stop and the indoor fan will run at preset speed.

2) Heating overload

- If $T_{\text{tube}} \leq 52^\circ\text{C}$, the unit will return to its original operation state.
- If $T_{\text{tube}} \geq 55^\circ\text{C}$, frequency rise is not allowed.
- If $T_{\text{tube}} \geq 58^\circ\text{C}$, the compressor will run at reduced frequency.
- If $T_{\text{tube}} \geq 62^\circ\text{C}$, the compressor will stop and the indoor fan will blow residue heat and then stop.

② Exhaust temperature protection of compressor

If exhaust temperature $\geq 98^\circ\text{C}$, frequency is not allowed to rise.

If exhaust temperature $\geq 103^\circ\text{C}$, the compressor will run at reduced frequency.

If exhaust temperature $\geq 110^\circ\text{C}$, the compressor will stop.

If exhaust temperature $\leq 90^\circ\text{C}$ and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

③ Communication fault

If the unit fails to receive correct signals for durative 3 minutes, communication fault can be justified and the whole system will stop.

④ Module protection

Under module protection mode, the compressor will stop. When the compressor remains at stop for at least 3 minutes, the compressor will resume its operation. If module protection occurs six times in succession, the compressor will not be started again.

⑤ Overload protection

If temperature sensed by the overload sensor is over 115°C , the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. If temperature is below 95°C , the overload protection will be relieved.

⑥ If voltage on the DC bus is below 150V or over 420V, the compressor will stop and the outdoor fan will stop with a time lag of 30 seconds. When voltage on the DC bus returns to its normal value and the compressor has stayed at stop for at least 3 minutes, the compressor will resume its operation.

⑦ Faults of temperature sensors

Designation of sensors	Faults
Indoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds
Indoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds
Outdoor ambient temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds
Outdoor tube temperature	The sensor is detected to be open-circuited or short-circuited for successive 30 seconds, and no detection is performed within 10 minutes after defrost begins.
Exhaust	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.
Overload	After the compressor has operated for 3 minutes, the sensor is detected to be open-circuited or short-circuited for successive 30 seconds.

3. Other Controls

(1) ON/OFF

Press the remote button ON/OFF: the on-off state will be changed once each time you press the button.

(2) Mode Selection:

Press the remote button MODE, then select and show in the following ways: AUTO, COOL, DRY, FAN, HEAT, AUTO.

(3) Temperature Setting Option Button

Each time you press the remote button TEMP+ or TEMP-, the setting temperature will be up or down by 1 °C. Regulating Range: 16~30°C, the button is useless under the AUTO mode.

(4) Time Switch

You should start and stop the machine according to the setting time by remote control.

(5) 5. SLEEP State Control

a. When the air conditioner is under the mode of COOL, DRY, and the SLEEP mode has been set well, after the SLEEP state keeps about 1 hour, the pre-setting T will raise 1 °C, and it will raise 1 °C again after 2 hours, so it raise 2°C in 2 hours, then it will run on at the setting temperature and wind speed.

b. When the air conditioner is under the mode of HEAT, and the Timer has been set well, after the SLEEP state keeps about 1 hour, the pre-setting T will reduce 1 °C, and it will reduce 1 °C again after 2 hours, so it reduce 2°C in 2 hours, then it will run on at the setting temperature and wind speed.

c. The setting temperature keeps the same under the FAN mode and AUTO mode.

(6) Indoor Fan Control

The Indoor Fan can be set as HIGH, MED, LOW by remote control, and the Indoor Fan will be respectively run at high, medium, low speed. It will also be set as AUTO, and the Indoor Fan is as the followings at the automatic wind speed.

Cooling mode: $T_{ring} \geq T_{setting} + 2$, high speed; $T_{setting} - 2 < T_{ring} < T_{setting} + 2$, medium speed; $T_{ring} \leq T_{setting} - 2$, low speed.

Sending wind mode: : $T_{ring} > T_{setting} + 4$, high speed; $T_{setting} + 2 \leq T_{ring} \leq T_{setting} + 4$, medium speed; $T_{ring} < T_{setting} + 2$, low speed.

Moisture removal mode: force to be set as the low speed

Heating mode: $T_{ring} \leq T_{setting} + 1$ high speed; $T_{setting} + 1 < T_{ring} < T_{setting} + 5$, medium speed; $T_{ring} \geq T_{setting} + 5$, low speed.

(7) Buzzer Control

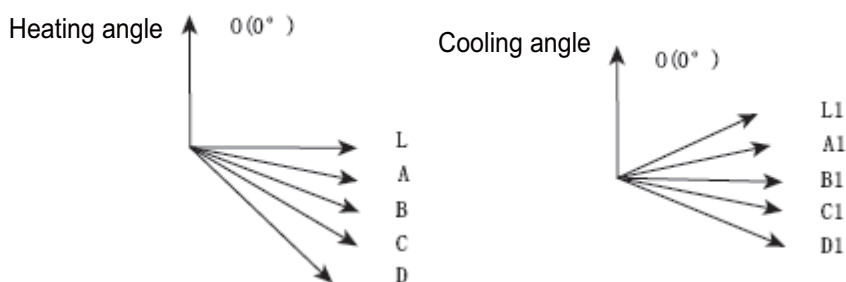
The buzzer will send a "Di" sound when the air conditioner is powered up or received the information sent by the remote control or there is a button input, the single tube cooler doesn't receive the remote control ON signal under the mode of heating mode.

(8) Auto button

If the controller is on, it will stop by pressing the button, and if the controller is off, it will be automatic running state by pressing the button, swing on and light on, and the main unit will run based on the remote control if there is remote control order.

(9) Up-and-Down Swinging Control

When power on, the up-and-down motor will firstly move the air deflector to o counter-clockwise, close the air outlet. After starting the machine, if you don't set the swinging functi on, heating mode and auto-heating mode, the up-and-down air deflector will move to D clockwise; under other modes, the up-and-down air deflector will move to L1. If you set the swinging function when you start the machine, then the wind blade will swing between L and D. The air deflector has 7 swinging states: Location L, Location A, Location B, Location C, Location D, Location L to Location D, stop at any location between L-D (the included angle between L~D is the same). The air deflector will be closed at 0 Location, and the swinging is effectual only on condition that setting the swinging order and the inner fan is running. The indoor fan and compressor may get the power when air deflector is on the default location.



(10) Display

① Operation pattern and mode pattern display

All the display patterns will display for a time when the power on, the operation indication pattern will display in red under standby status. When the machine is start by remote control, the indication pattern will light and display the current operation mode (the mode light includes: Cooling, heating and dehumidify). If you close the light key, all the display patterns will close.

② Double-8 display

According to the different setting of remote control, the nixie light may display the current temperature (the temperature scope is from 16 °C to 30 °C) and indoor ambient temperature. The heating and air supply temperature will display 25 °C under auto-mode, the temperature will display 20 °C under the heating mode, and the temperature will display H1 under the defrosting mode.(If you set the fahrenheit temperature display, the nixie light will display according to fahrenheit temperature)

(11) Protection function and failure display

E2: Freeze-proofing protection E4: Exhausting protection E5: Overcurrent protection

E6: Communication failure

F1: Indoor ambient sensor start and short circuit (continuously measured failure in 20S)

F2: Indoor evaporator sensor start and short circuit (continuously measured failure in 20S)

F3: Outdoor ambient sensor start and short circuit (continuously measured failure in 30S)

F4: Outdoor condenser sensor start and short circuit (continuously measured failure in 30S, and don't measure within 10 minutes after defrosted)

F5: Outdoor exhausting sensor start and short circuit (continuously measured failure in 30S after the compressor operated 3 minutes)

H3: Overload protection of compressor

H5: Module protection

PH: High-voltage protection

PL: Low-voltage protection

P1: Nominal cooling and heating

P2: Maximum cooling and heating

P3: Medium cooling and heating

P0: Minimum cooling and heating

(12) Drying Function

You may start or stop the drying function under the modes of cooling and dehumidify at the starting status (The modes of automatism, heating and air supply do not have drying function). When you start the drying function, after stop the machine by pressing the switch button, you should keep running the inner fans for 10 minutes under low air damper (The swing will operate as the former status within 10 minutes, and other load is stopped), then stop the entire machine; When you stop the drying function, press the switch button will stop the machine directly.

When you start the drying function, operating the drying button will stop the inner fans and close the guide louver.

(13) Memory function when interrupting the power supply

Memory content: mode, swing function, light, set temperature and wind speed.

After interrupted the power supply, the machine will start when recovering the power according to the memory content automatically. If the last remote control command has not set the timed function, the system will remember the last remote control command and operate according it. If the last remote control command has set timed function and the power supply is interrupted before the timed time, the system will remember the timed function of the last remote control command, the timed time will recounted form power on. If the last remote control command has set timed function, the time is out and the system is start or stop according to the set time when the power supply is interrupted, the system will remember the operation status before the power supply was interrupted, and do not carry out timed action; The timed clock will not remembered.

7. Installation Manual

7.1 Notices for Installation

Important Notices

- 1.The unit installation work must be done by qualified personnel according to the local rules and this manual.
- 2.Before installing, please contact with local authorized maintenance center, if unit is not installed by the authorized maintenance center, the malfunction may not be solved, due to discommodious contacts.
- 3.When removing the unit to the other place, please firstly contact with the authorized Maintenance Center in the local area.

7.1.1 Basic Requirements For Installation Position

Install in the following place may cause malfunction. If it is unavoidable contact with service center please:

- Place where strong heat sources, vapors, flammable gas or volatile object are emitted.
- Place where high-frequency waves are generated by radio equipment, welders and medical equipment.
- Place where a lot of salinities such as coast exists.
- Place where the oil (machine oil) is contained in the air.
- Place where a sulfured gas such as the hot spring zones is generated.
- Other place with special circumstance.

7.1.2 Indoor Unit Installation Position Selection

- 1.The air inlet and outlet vent should be far from the obstruction, make sure that the air can be blown through the whole room.
- 2.Select a position where the condensing water can be easily drained out, and the place is easily connected for outdoor unit.
- 3.Select a location where the children can not reach.
- 4.Can select the place where is strong enough to withstand the full weight and vibration of the unit. And will not increase the noise.
- 5.Be sure to leave enough space to allow access for routine maintenance. The height of the installed location should be 250cm or more from the floor.
- 6.Select a place about 1m or more away from TV set or any other electric appliances.
- 7.Select a place where the filter can be easily taken out.
- 8.Make sure that the indoor unit installation should accord with installation dimension diagram requirements.
- 9.Do not use the unit in the immediate surroundings of a laundry a bath a shower or a swimming pool.

7.1.3 Outdoor Unit Installation Position Selection

- 1.Select a location from which noise and outflow air emitted by unit will not inconvenience neighbors, animals, plants.
- 2.Select a location where there should be sufficient ventilation.
- 3.Select a location where there should be no obstructions cover the inlet and outlet vent.
- 4.The location should be able to withstand the full weight and vibration of the outdoor unit and permit safe installation.
- 5.Select a dry place, but do not expose under the direct sunlight or strong wind.
- 6.Make sure that the outdoor unit installation dimension should accord with installation dimension diagram, convenient for maintenance, repair.
- 7.The height difference of connecting the tubing within 10m, the length of connecting the tubing within 15 or 20m.
- 8.Select a place where it is out of reach for the children.
- 9.Select a place where will not block the passage and do not influence the city appearance.

7.1.4 Safety Requirements For Electric Appliances

1. The power supply should be used the rated voltage and AC exclusive circuit,the power cable diameter should be satisfied.
2. Don't drag the power cable emphatically.
- 3.It should be reliably earthed, and it should be connected to the special earth device,the installation work should be operated by the professional. The air switch must have the functions of magnetic tripping and heat tripping, in order to protect the short circuit and overloading.
- 4.The min. distance from the unit and combustive surface is 1.5m.
- 5.The appliance shall be installed in accordance with national wiring regulations.
- 6.An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

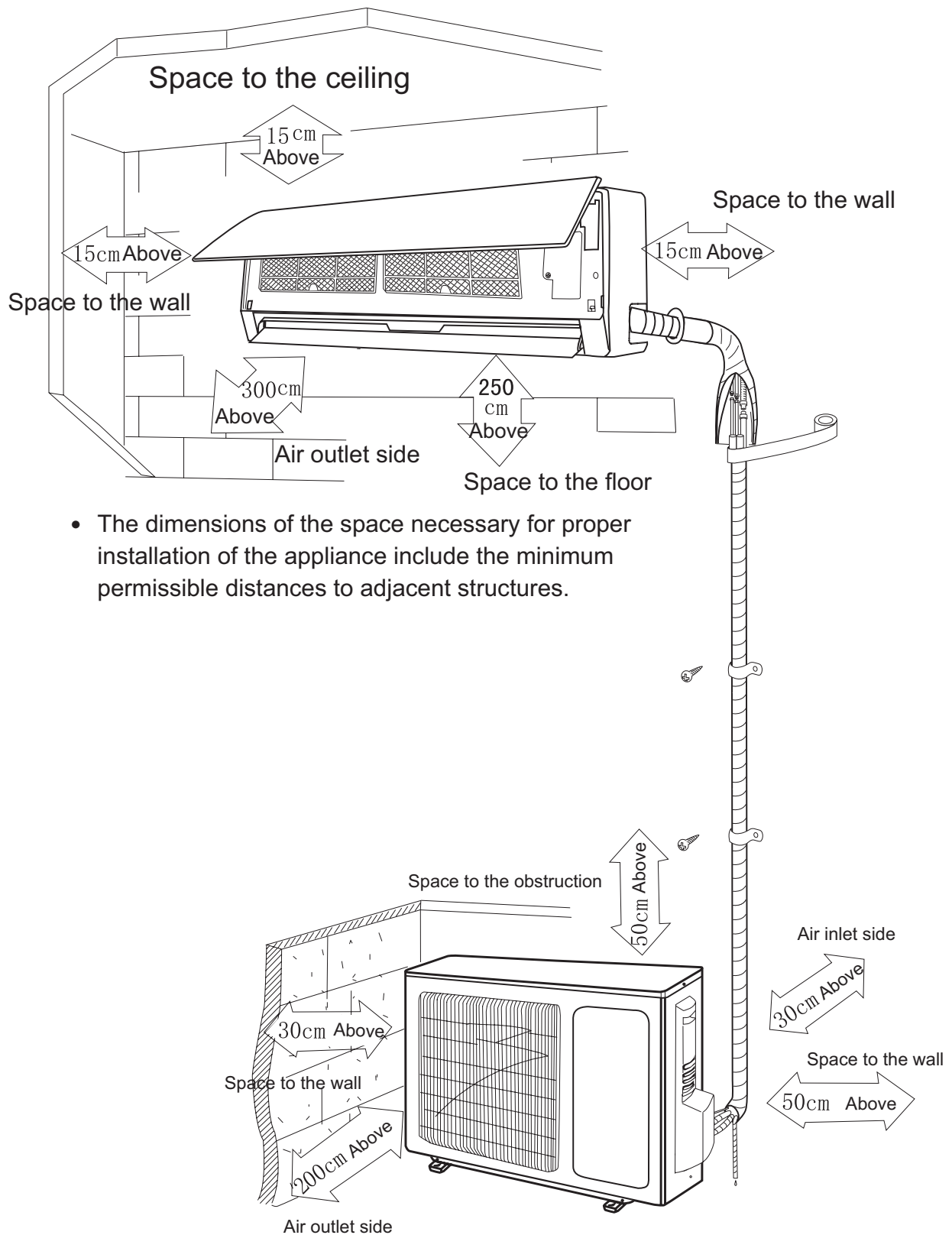
Note:

- Make sure that the Live wire or Zero line as well as the earth wire in the family power socket can not be wrong connected, there should be reliable and no short circuit in the diagram.
- wrong connection may cause fire.

7.1.5 Earthing requirements

1. Air conditioner is type I electric appliance, thus please do conduct reliable earthing measure.
2. The yellow-green two-color wire in airconditioner is earthing wire and cannot be usedfor other propose. It cannot be cut off and be fix it by screw, otherwise it would causeelectric shock.
3. The earth resistance should accord to the National Criterion.
4. The user power must offer the reliable earthing terminal. Please don't connect theearthing wire with the following place:
① Tap water pipe. ② Gas pipe. ③ Contamination pipe. ④ Other places that professional personnel consider them unreliable.
5. The model and rating values for fuses accord with the silk print on fuse cover or related PCB board.

7.2 Installation Drawing



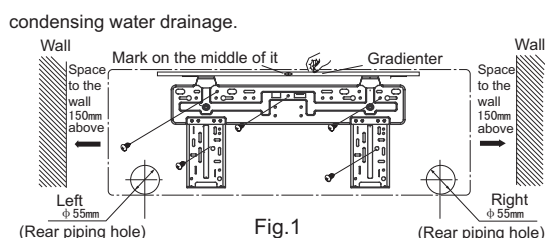
- The dimensions of the space necessary for proper installation of the appliance include the minimum permissible distances to adjacent structures.

Note: The above picture is for reference only.

7.3 Install indoor unit

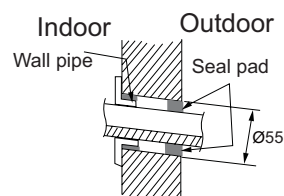
7.3.1 Installing Mounting Plate

1. Make the mounting plate completely level. As the water tray's outlet of the indoor unit is two-way type, the indoor unit during installation should slightly slant to water tray's outlet for smooth drainage of condensing water.
2. Fix the mounting plate on the wall with screws. (Where is pre-covered with plastic granula)
3. Be sure that the mounting plate has been fixed firmly enough to withstand the weight of an adult of 60kg; further more, the weight should be evenly shared by each screw.



7.3.2 Boring Piping Hole

1. Make the piping hole ($\Phi 55$) in the wall at a slight downward slant to the outdoor side.
2. Insert the piping-hole sleeve into the hole to prevent the connection piping and wiring from being damaged when passing through the hole.



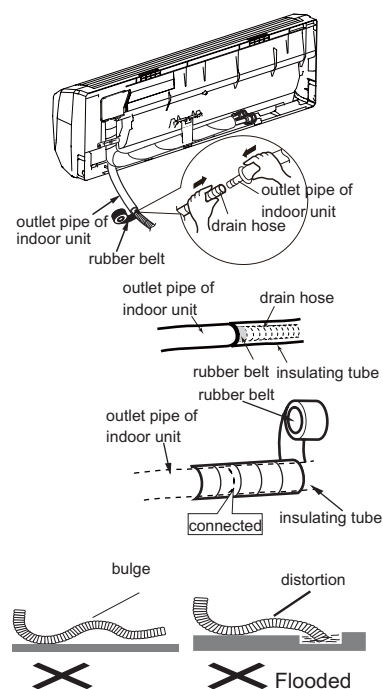
7.3.3 Installing Drain Hose

1. Connect the drain hose to the outlet pipe of the indoor unit. Bind the joint with rubber belt.

2. Put the drain hose into insulating tube.

3. Wrap the insulating tube with wide rubber belt from the joint of outlet pipe and insulating pipe so as to prevent shift of insulating tube. The drain hose should be placed at a downward slant for easy discharge of condensate.

Note: the insulating tube should be connected reliably with the sleeve outside the outlet pipe. The drain hose should be downward slant, without distortion, bulge or fluctuation. Do not put the water outlet in the water.



7.3.4 Connecting Indoor and Outdoor Electric Wires

1. Open the front panel.
2. Remove the wiring cover. Connect and fix power connection cord and signal control wire (only for heat pump type) to the terminal board as shown in Fig 2.
3. Make the power connection cord and signal control wire (only for heat pump unit) through the hole in the back of indoor unit.
4. Reinstall the clamp and wiring cover.
5. Recover the front panel.

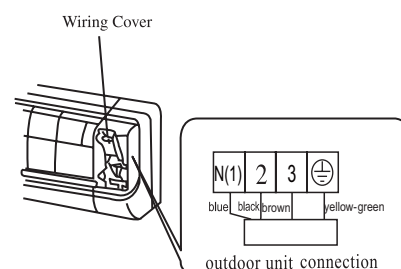


Fig.2

NOTE:

All interconnecting wiring between indoor and outdoor unit must be performed by a licenced electrical contractor .

- The electric wiring must be correctly connected. Improper connection may cause spare parts malfunction.
- Tighten the terminal screws adequately to prevent loosening.
- After tightening the screws, slightly pull the wire and confirm whether it is firm or not.
- Ensure the electrical connections are properly earthed to prevent electrical shocks.
- Ensure all wiring connections are secure and the cover plates are reinstalled properly. Poor installations that allow dust or moisture incursion may cause fire or electrocution.

7.3.5 Installing Indoor Unit

- The piping can be output from right, right rear, left or left rear.

1. When routing the piping and wiring from the left or right side of indoor unit, cut off the tailings from the chassis as necessary (As shown in Fig.3)

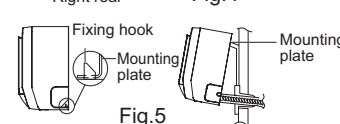
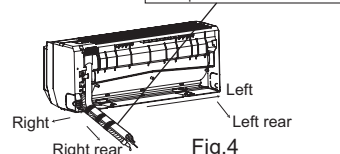
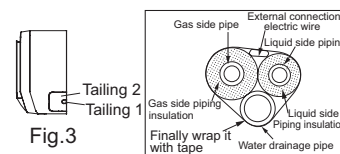
(1) Cut off the tailings 1 when routing the wiring only;

(2) Cut off the tailings 1 and tailings 2 when routing both the wiring and piping.

2. Take out the piping from body case, wrap the piping, power cords, drain hose with the tape and make them through the piping hole. (As shown in Fig.4)

3. Hang the mounting slots of the indoor unit on the upper hooks of the mounting plate and check if it is firm enough. (As shown in Fig.5)

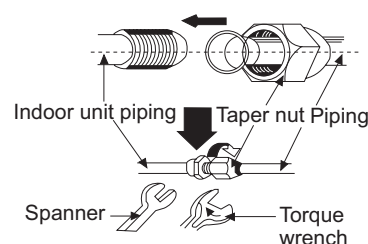
4. The height of the installed location should be 2m or more from the floor.

**7.3.6 Installing Connection Pipe**

1. Align the center of the piping flare with the relevant valve.

2. Screw in the flare nut by hand and then tighten the nut with spanner and torque wrench referring to the following:

Hex nut diameter	Tightening torque (N·m)
Φ6	15~20
Φ 9.52	31~35
Φ 12	50~55
Φ 16	60~65
Φ 19	70~75



NOTE: Firstly connect the connection pipe to indoor unit, then to outdoor unit; pay attention to the piping bending, do not damage the connection pipe; ensure the joint nut is adequately tightened, otherwise it may cause leakage.

7.4 Install outdoor unit**7.4.1 Electric Wiring**

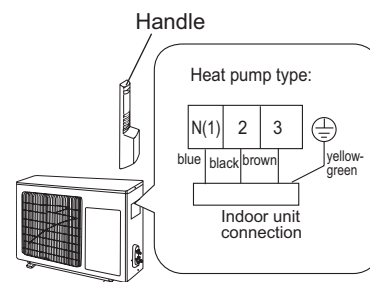
1. Remove the handle on the outdoor unit's right side plate.

2. Take off wire clamp. Connect and fix power connection cord and signal control wire (only for heat pump type) to the terminal board. Wiring should fit that of indoor unit.

3. Fix the power connection cord and signal control wire (only for heat pump type) with wire clamps and then connect the corresponding connector.

4. Confirm if the wire has been fixed properly.

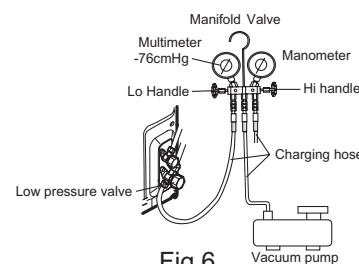
5. Reinstall the handle.

**NOTE:**

- Incorrect wiring may cause spare parts malfunction.
- After the wire has been fixed, ensure there is free space between the connection and fixing places on the lead wire.

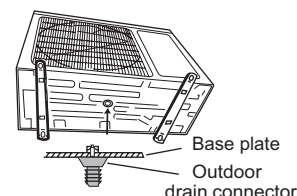
7.4.2 Air Purging and Leakage Test

1. Connect charging hose of manifold valve to charge end of low pressure valve (both high/low pressure valves must be tightly shut).
2. Connect joint of charging hose to vacuum pump.
3. Fully open the handle of Lo manifold valve.
4. Open the vacuum pump to evacuate. At the beginning, slightly loosen joint nut of low pressure valve to check if there is air coming inside. (If noise of vacuum pump has been changed, the reading of multimeter is 0) Then tighten the nut.
5. Keep evacuating for more than 15mins and make sure the reading of multimeter is -1.0×10^5 pa(-76cmHg).
6. Fully open high/low pressure valves.
7. Remove charging hose from charging end of low pressure valve.
8. Tighten bonnet of low pressure valve. (As shown in Fig.6)



7.4.3 Outdoor Condensation Drainage (only for Heat pump type)

During heating operation, the condensing water and defrosting water should be drained out reliably through the drain hose. Install the outdoor drain connector in a $\Phi 25$ hole on the the base plate and attach the drain hose to the connector,so that the waste water formed in the outdoor unit can be drained out satisfactorily.



7.5 Check after installation and test operation

7.5.1 Check after Installation

Items to be checked	Possible malfunction
Has it been fixed firmly?	The unit may drop, shake or emit noise.
Have you done the refrigerant leakage test?	It may cause insufficient cooling(heating) capacity
Is heat insulation sufficient?	It may cause condensation and dripping.
Is water drainage satisfactory?	It may cause condensation and dripping.
Is the voltage in accordance with the rated voltage marked on the nameplate?	It may cause electric malfunction or damage the product.
Is the electric wiring and piping connection installed correctly and securely?	It may cause electric malfunction or damage the part.
Has the unit been connected to a secure earth connection?	It may cause electrical leakage.
Is the power cord specified?	It may cause electric malfunction or damage the part.
Are the inlet and outlet openings blocked?	It may cause insufficient cooling(heating) capacity.
Is the length of connection pipes and refrigerant capacity been recorded?	The refrigerant capacity is not accurate.

7.5.2 Operation Test

1.Before Operation Test

- (1)Do not switch on power before installation is finished completely.
- (2)Electric wiring must be connected correctly and securely.
- (3)Cut-off valves of the connection pipes should be opened.
- (4)All the impurities such as scraps and thrums must be cleared from the unit.

2.Operation Test Method

- (1)Switch on power and press "ON/OFF" button on the wireless remote controllerto start the operation.
- (2)Press MODE button to select the COOL, HEAT (Cooling only unit is not available), FAN to check whether the operation is normal or not.

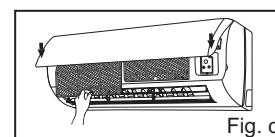
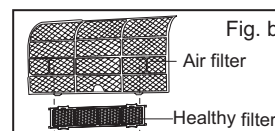
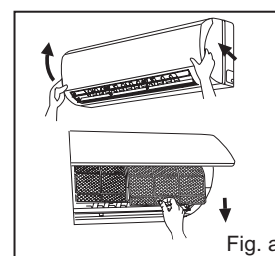
7.6 Installation and Maintenance of Healthy Filter

7.6.1 Installation of Healthy Filter

- 1.Fig. bFig. c Lift up the front panel from the two ends of it, as the arrow direction shown. Thenpull the air filter out.(as shown Fig.a)

- 2.Attach the healthy filter onto the air filter, (as shown Fig.b).

3. Mount the air filter properly along the arrowdirection in Fig.c, and then close the panel cover.



7.6.2 Cleaning and Maintenance

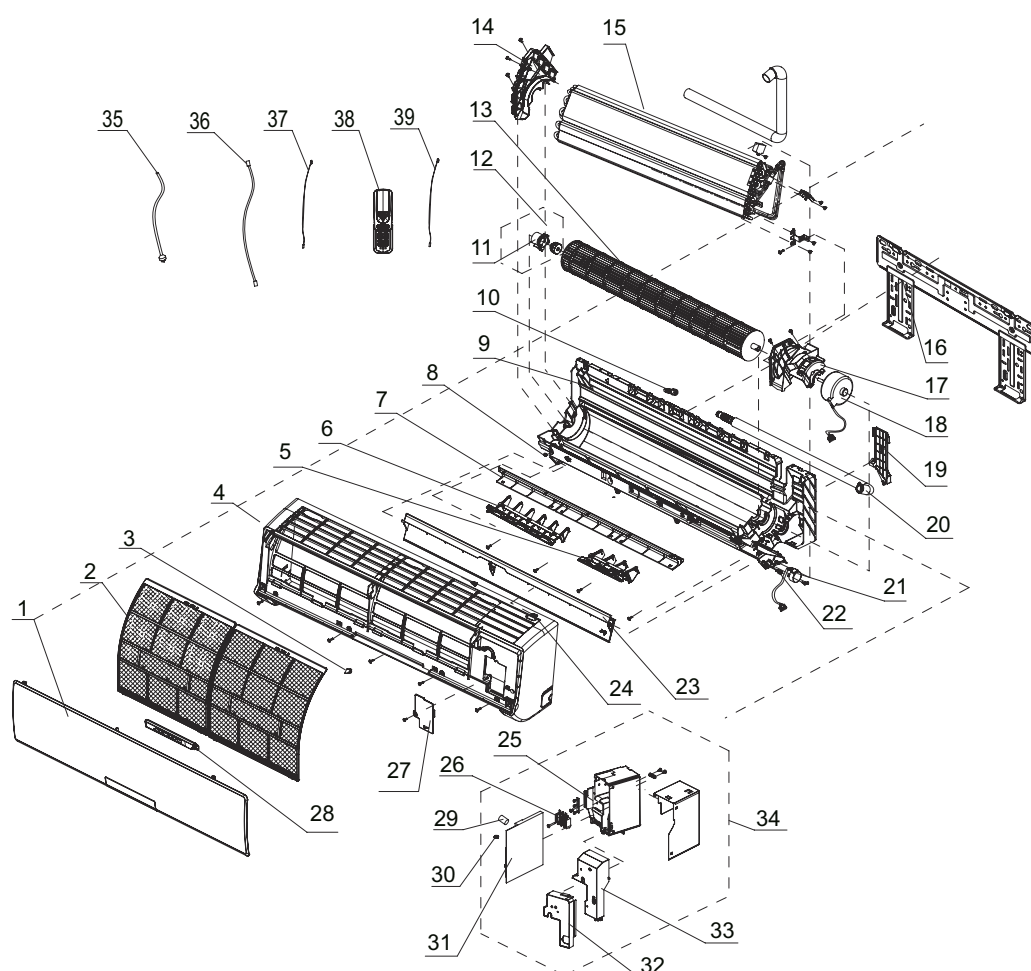
Remove the healthy filter before cleaning and reinstall it after clean according to the installation instruction, but can't with brush or hard things. After washing, be sure to shake off remaining water and dry in the shade.

7.6.3 Service Life

The healthy filter commonly has its usage lifetime for one year under normal condition. As for silver ion filter, it is invalid when its surface becomes black (green). This supplementary instruction is provided for reference to the unit with healthy filter. If the graphics provided herein is different from the physical goods, the latter one shall prevail. The quantity of healthy filters shall be based on the actual delivery.

8. Exploded Views and Parts List

8.1 Indoor Unit

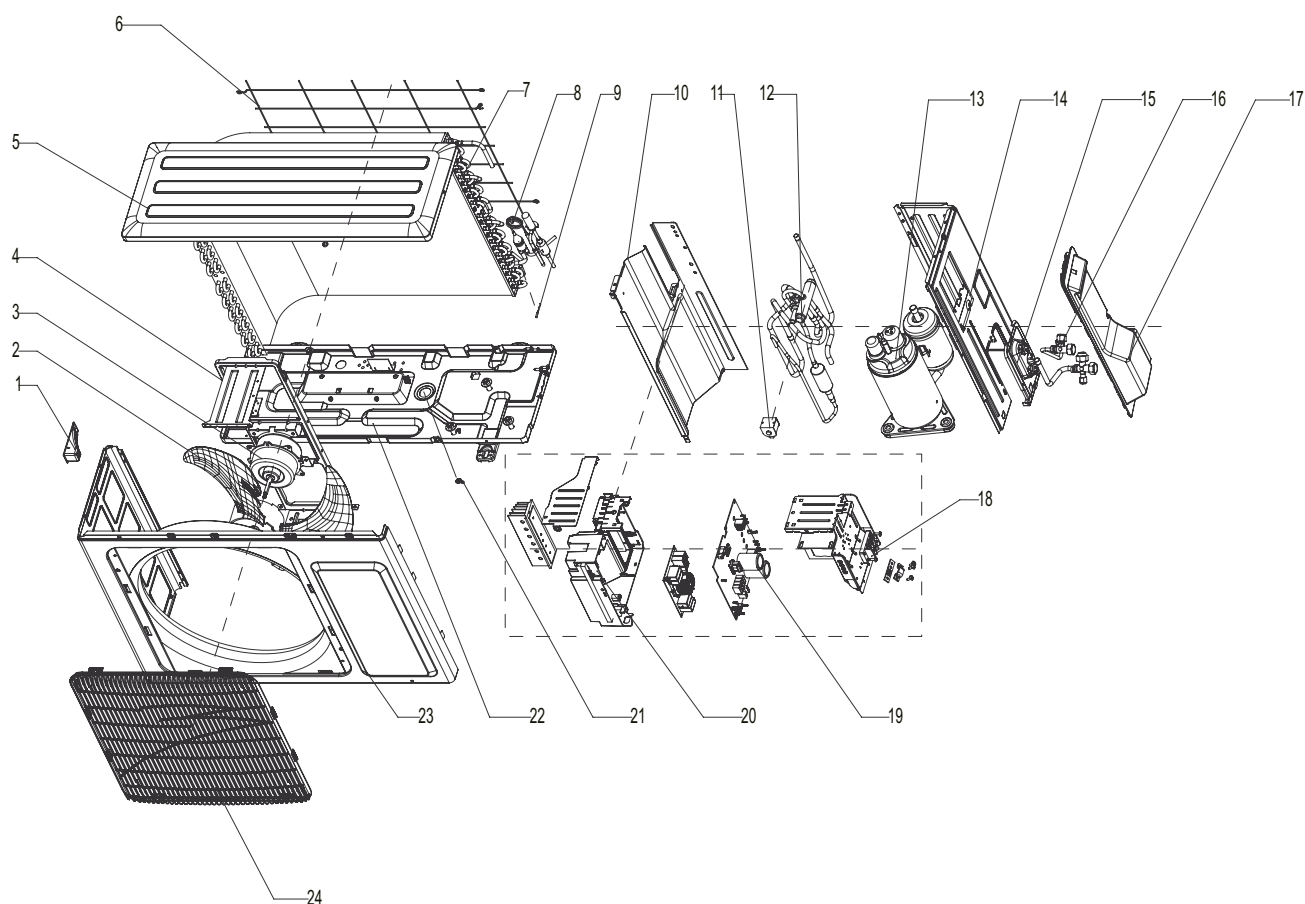


NO.	Description	Part Code		Qty
		GWH09RA-K3DNA1A/I	GWH12RB-K3DNA1A/I	
	Product code	CB144N0020	CB144N0030	
1	Front Panel Assy	20012765	20012765	1
2	Filter Sub-Assy	1112220401	1112220401	2
3	Screw Cover	24252016	24252016	1
4	Front Case Sub-assy	20012790	20012790	1
5	Air Louver 1	1051215603	1051215603	1
6	Air Louver 2	1051215503	1051215503	1
7	Helicoid Tongue	2611216302	2611216302	1
8	Left Axile Bush	10512037	10512037	1
9	Rear Case assy	22202467	22202467	1
10	Rubber Plug (Water Tray)	76712012	76712012	1
11	Ring of Bearing	26152022	26152022	1
12	O-Gasket sub-assy of Bearing	76512051	76512051	1
13	Cross Flow Fan	10352017	10352017	1
14	Evaporator Support	24212091	24212091	1
15	Evaporator Assy	01002610	01002610	1
16	Wall Mounting Frame	01252021	01252021	1
17	Motor Press Plate	26112161	26112161	1
18	Fan Motor	150120874	150120874	1
19	Pipe Clamp	2611216401	2611216401	1
20	Drainage hose	0523001401	0523001401	1
21	Step Motor	1521210801	1521210801	1
22	Crank	10582070	10582070	1
23	Guide Louver	10512203	10512203	1
24	Axile Bush	10542008	10542008	1
25	Electric Box	20112082	20112082	1
26	Terminal Board	42011233	42011233	1
27	Electric Box Cover2	20122075	20122075	1
28	Display Board	30565110	30565110	1
29	Capacitor CBB61	33010002	33010002	1
30	Jumper	4202300102	4202300104	1
31	Main Board	30138745	30138745	1
32	Shield cover of Electric Box sub-assy	01592073	01592073	1
33	Electric Box Cover1	20122103	20122103	1
34	Electric Box Assy	2020264401	20202644	1
35	Power Cord	400204649	400204649	1
36	Connecting Cable	400205236	400205236	1
37	Ambient Temperature Sensor	390000451	390000451	1
38	Remote Controller	30510125	30510125	1
39	Tube Sensor	390000591	390000591	1

The above data are subject to be changed without notice.

8.2 Outdoor Unit

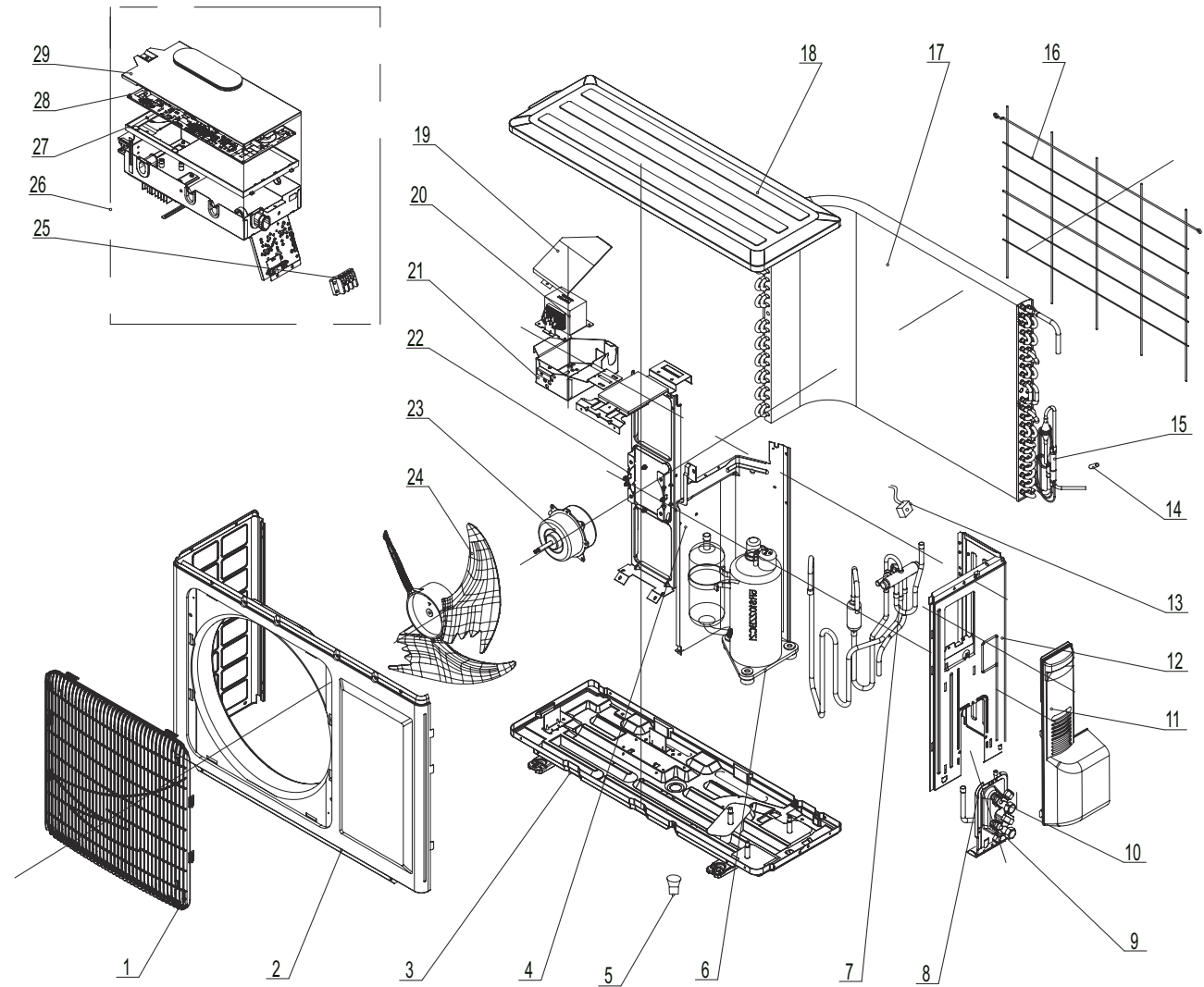
09K Uuit



NO.	Description	Part Code	Qty
		GWH09RA-K3DNA1A/O	
		Product code	
		CB144W0020	
1	Small handle	26233100	1
2	Axial Flow Fan	10333004	1
3	Fan Motor	1501315802	1
4	Motor Support	01703058	1
5	Top Cover Sub-Assy	01253454	1
6	Rear Grill	01473009	1
7	Condenser Assy	01113546	1
8	Electric Expansion Valve Sub-Assy	07133564	1
9	Temperature Sensor	3900030802	1
10	Clapboard Sub-Assy	01233385	1
11	Magnet Coil	4300040050	1
12	4-way Valve Assy	03123385	1
13	Compressor and fittings	00103224_G	1
14	right Side Plate Sub-Assy	0130317801	1
15	Valve support	0170308901P	1
16	Valve	07100005/07133082	1
17	big Handle	26233433	1
18	Terminal Board	42011113	1
19	Capacitor	33310311	1
20	Electric Box Assy	02603516	1
21	Drainage Connector	06123401	1
22	Chassis Sub-assy	01203954P	1
23	Front Panel	01533027P	1
24	Front Grill	22413433	1

The above data are subject to be changed without notice.

12K Unit



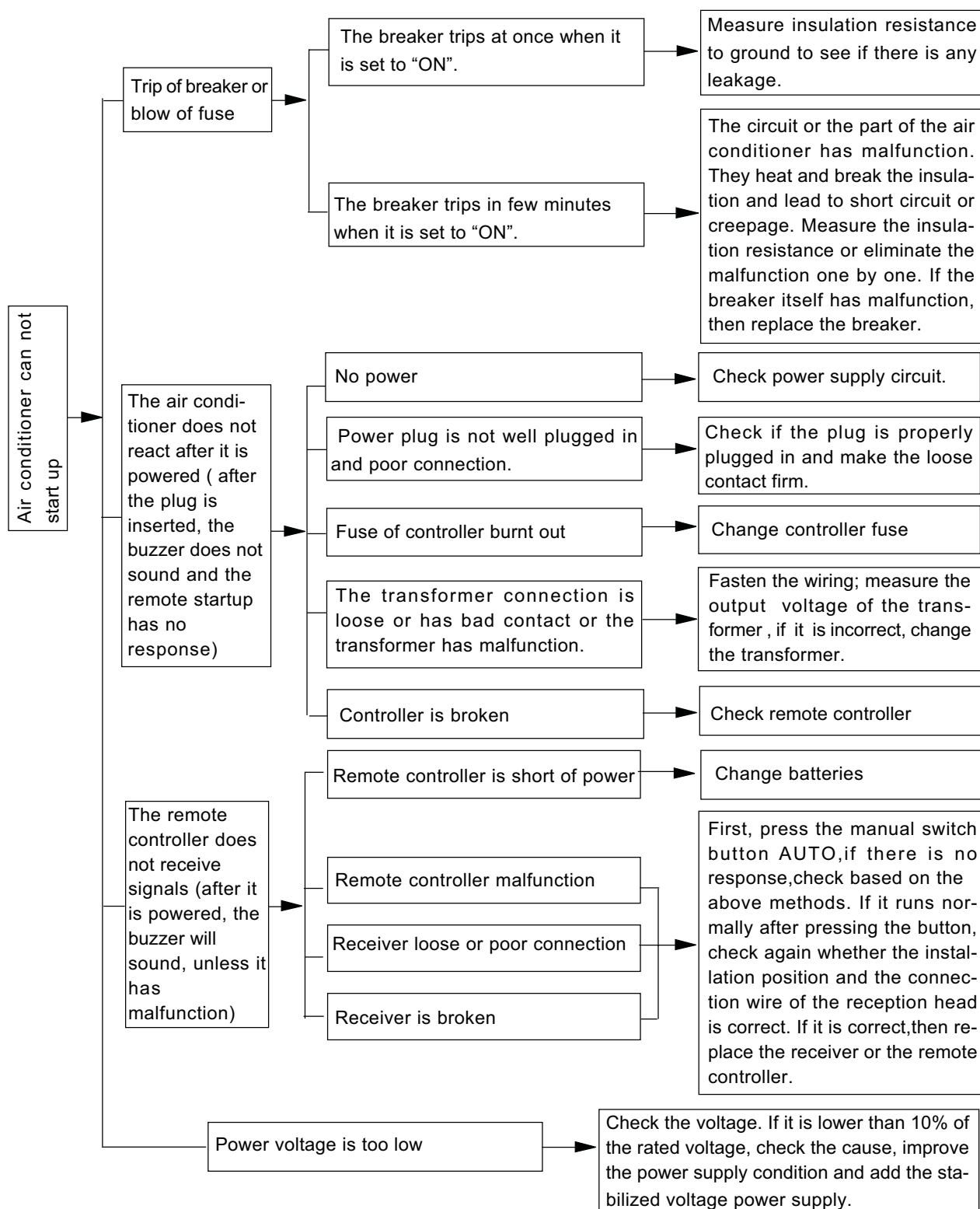
NO.	Description	Part Code	Qty
		GWH12RB-K3DNA1A/O	
		Product code	
		CB144W0030	
1	Front grill	3063401	1
2	Front Panel	15330124	1
3	Chassis Sub-assy	01203919P	1
4	Clapboard Sub-Assy	01233034	1
5	Drainage Connector	06123401	1
6	Compressor and fittings	00103215	1
7	4-way Valve Assy	03123420	1
8	Valve Support	01713041	1
9	Valve	07100005	1
10	Valve	07100004	1
11	Big Handle	26233433	1
12	Right Side Plate Assy	0130200404	1
13	Magnet Coil	4300040047	1
14	Temperature Sensor	39000310	1
15	Capillary Sub-assy	03063401	1
16	Rear Grill	01473014	1
17	Condenser Assy	01113888	1
18	Top Cover Plate	01253443	1
19	Cover of Reactor box	01413029	1
20	Reactor	43130185	1
21	Reactor sub-assy	01403616	1
22	Motor Support Sub-Assy	0170309701Y	1
23	Fan Motor	15013158	1
24	Axial Flow Fan	10333004	1
25	Terminal Board	42011113	1
26	Electric Box Assy	02603502	1
27	Electric box 1	20113005	1
28	Main Board	30138743	1
29	Electric Box Cover Sub-Assy	0260309601	1

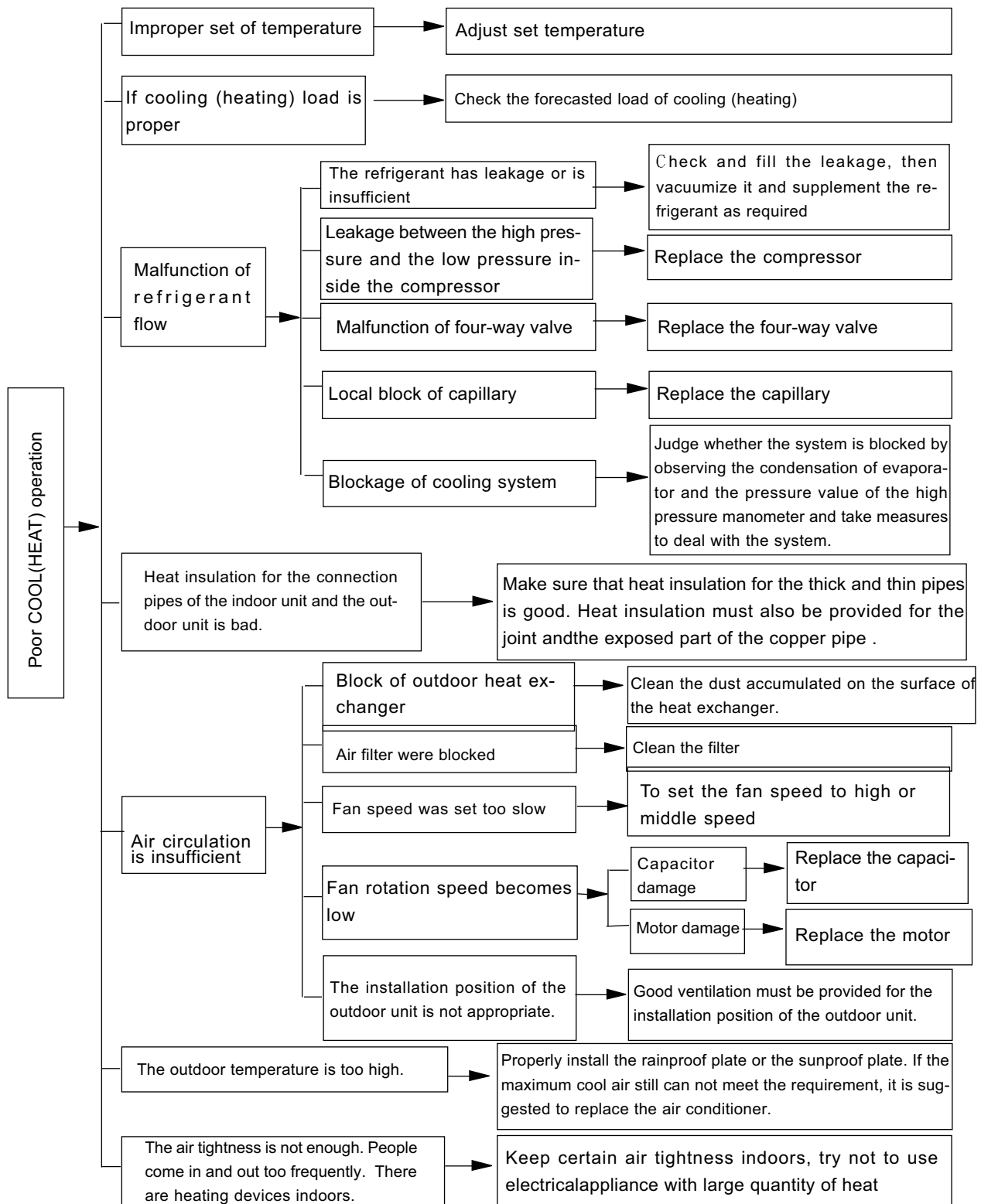
The above data are subject to be changed without notice.

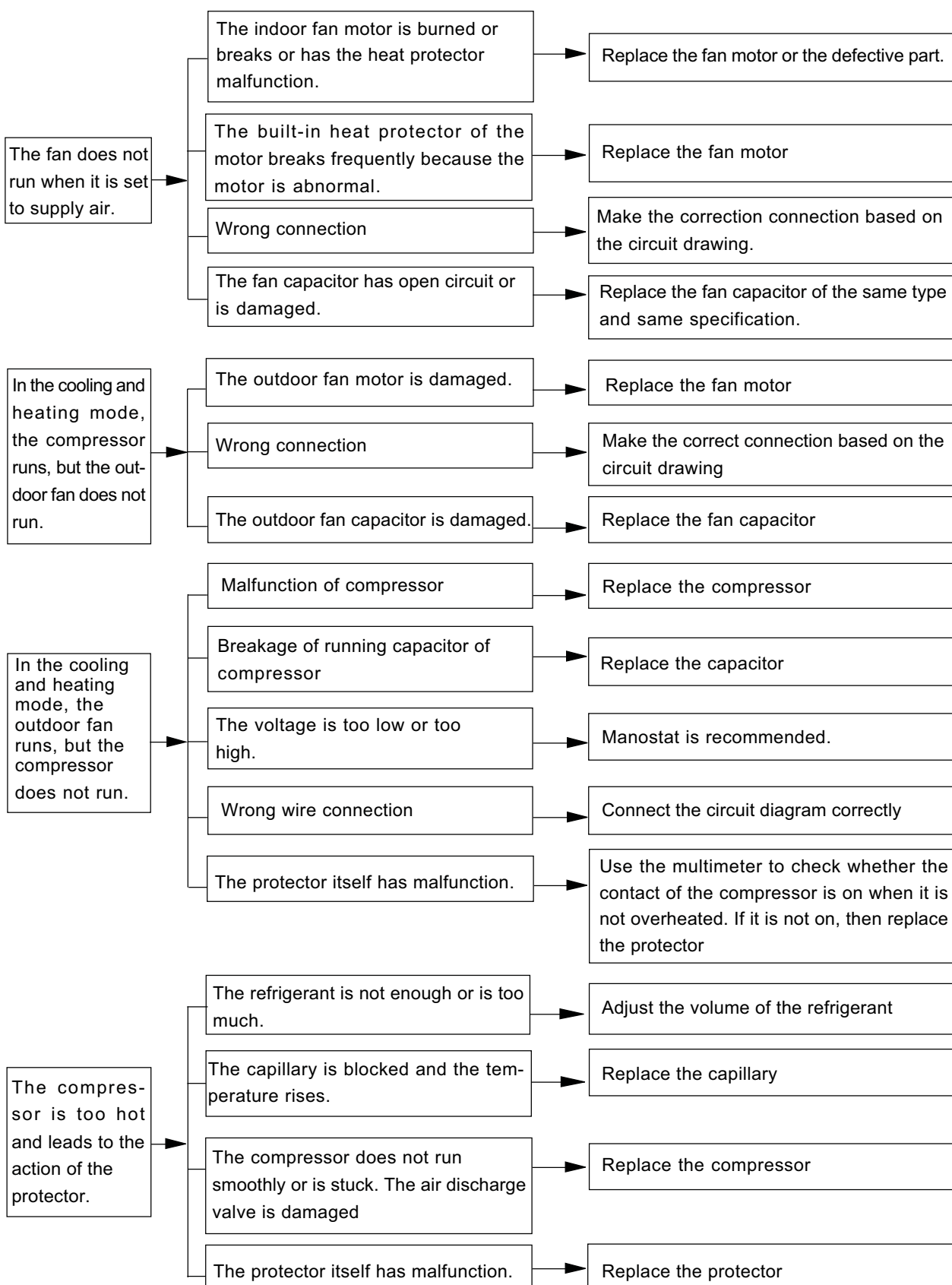
9. Troubleshooting

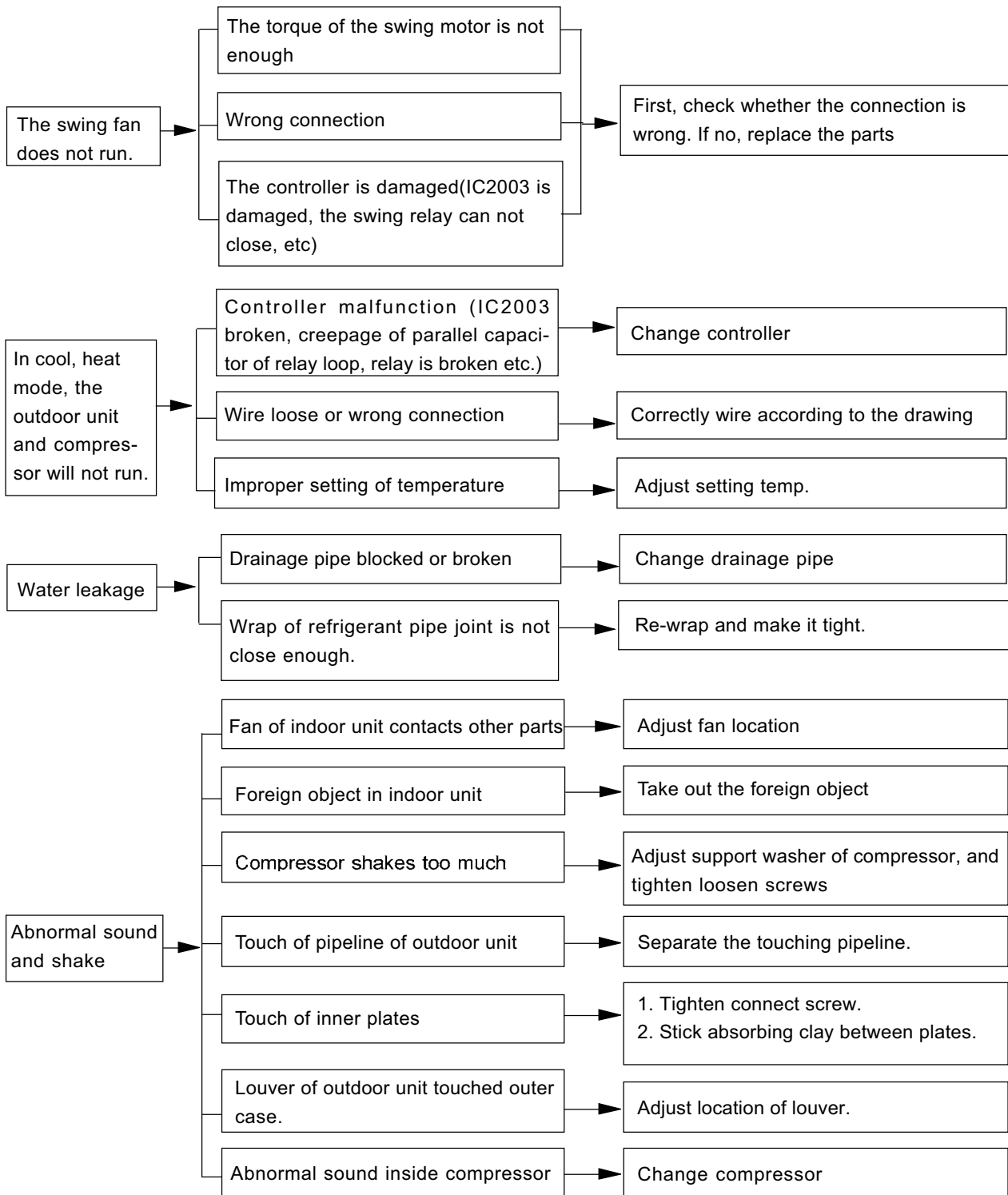
9.1 Malfunction Analysis

Note: When replacing the controller,make sure insert the wire jumper into the new controller, otherwise the unit will display C5









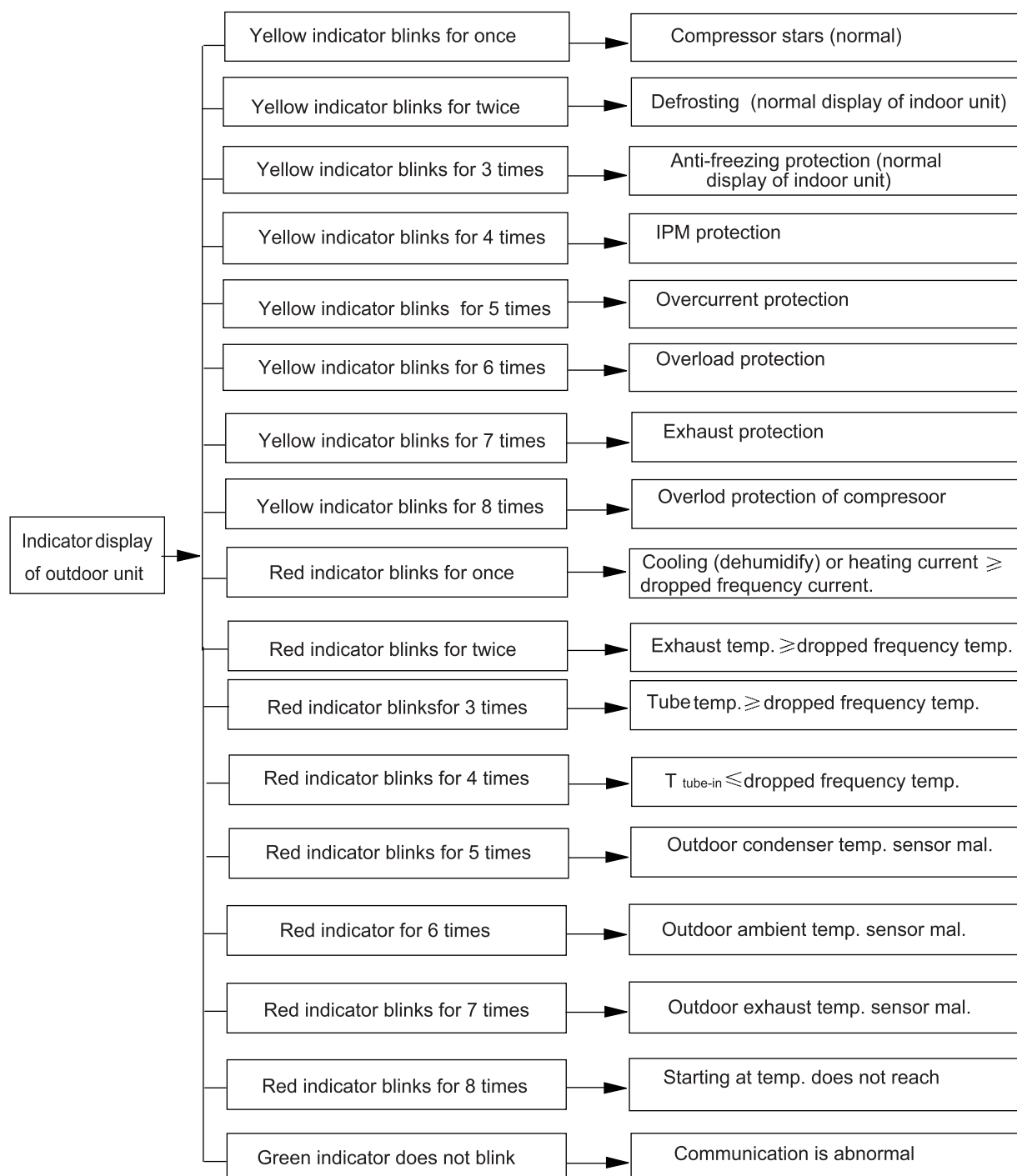
9.2 Malfunction Code

Flashing LED of Indoor/Outdoor Unit and Primary Judgement

	Name of Operation Status	Yellow LED	Red LED	Green LED	Display on IDU
1	Compressure operates	Blink once			
2	Defrosting	Blink twice			H1
3	Freeze prevention protection	Blink for 3 times			E2
4	IPM protection	Blink for 4 times			H5(displayed after it occurs for successively 6 times)
5	Overcurrent protection	Blink for 5 times			E5
6	Overload protection	Blink for 6 times			H4
7	Discharge protection	Blink for 7 times			E4
8	Overload protection	Blink for 8 times			H3
9	Capacity power protection	Blink for 9 times			L9
10	Read-write malfunction of EEPROM	Blink for 11 times			
11	Low-voltage protection	Blink for 12 times			PL
12	High-voltage protection	Blink for 13 times			PH
13	PFC overcurrent protection	Blink for 14 times			HC
14	Models of IDU and ODU don't not match	Blink for 16 times			LP
15	Limit frequency(current)		Blink once		
16	Limit frequency(discharge)		Blink twice		
17	Limit frequency(overload)		Blink for 3 times		
18	Limit frequency(freeze prevention)		Blink for 4 times		
19	Malfunction of outdoor ambient temp sensor		Blink for 6 times		F3
20	Malfunction of outdoor pipe temp sensor		Blink for 5 times		F4
21	Malfunction of outdoor discharge temp sensor		Blink for 7 times		F5
22	Temperature for operation of the unit is reached.		Blink for 8 times		
23	Limit frequency(power)		Blink for 13 times		
24	Protection of fan		Blink for 14 times		
25	Normal communication			Continuously blink	
26	Malfunction of communication			Off	E6
27	Malfunction of indoor ambient temp sensor				F1
28	Malfunction of indoor pipe temp sensor				F2

Malfunction Display

If malfunction occurs, corresponding code will display and the unit will resume normal until protection or malfunction disappears.



Analysis or processing of some of the malfunction display:

1. Compressor discharge protection
Possible reasons: shortage of refrigerant; blockage of air filter; poor ventilation or air flow short pass for condenser; the system has noncondensing gas (such as air, water etc.); blockage of capillary assy (including filter); leakage inside four-way valve causes incorrect operation; malfunction of compressor; malfunction of protection relay; malfunction of discharge sensor; outdoor temperature too high.
Processing method: refer to the malfunction analysis in the above section.
2. Low voltage overcurrent protection
Possible reason: Sudden drop of supply voltage.
3. Communication malfunction
Processing method: Check if communication signal cable is connected reliably.
4. Sensor open or short circuit
Processing method: Check whether sensor is normal, connected with the corresponding position on the controller and if damage of lead wire is found.
5. Compressor overload protection
Possible reasons: insufficient or too much refrigerant; blockage of capillary and increase of suction temp.; improper running of compressor, burning in or stuck of bearing, damage of discharge valve; malfunction of protector.
Processing method: adjust refrigerant amount; replace the capillary; replace the compressor; use universal meter to check if the contactor of compressor is fine when it is not overheated, if not replace the protector.
6. System malfunction
i.e. overload protection. When tube temperature (Check the temperature of outdoor heat exchanger when cooling and check the temperature of indoor heat exchanger when heating) is too high, protection will be activated.
Possible reasons: Outdoor temperature is too high when cooling; insufficient outdoor air circulation; refrigerant flow malfunction.
please refer to the malfunction analysis in the previous section for handling method .
7. IPM module protection
Processing method: Once the module malfunction happens, if it persists for a long time and can not be self- canceled, cut off the power and turn off the unit, and then re-energize the unit again after about 10 min. After repeating the procedure for several times, if the malfunction still exists, replace the module.

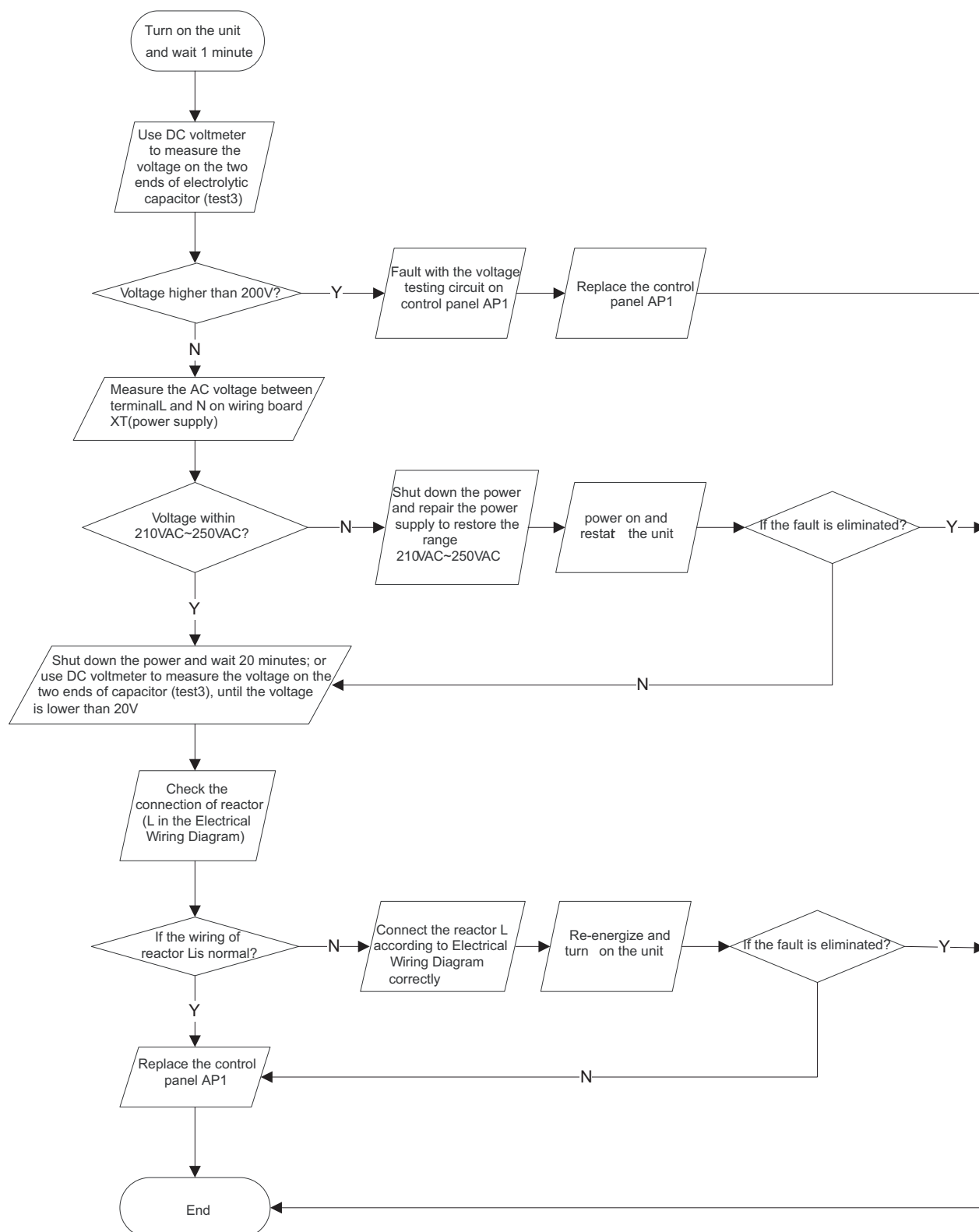
9.3 How to Check simply the main part

(1) Capacitor charge fault (Fault with outdoor unit) (AP1 below refers to the outdoor control panel)

Main Check Points:

Use AC voltmeter to check if the voltage between terminal L and N on the wiring board is within 210VAC~240VAC.
If the reactor (L) is correctly connected? If the connection is loose or fallen? If the reactor (L) is damaged?

Fault diagnosis process:

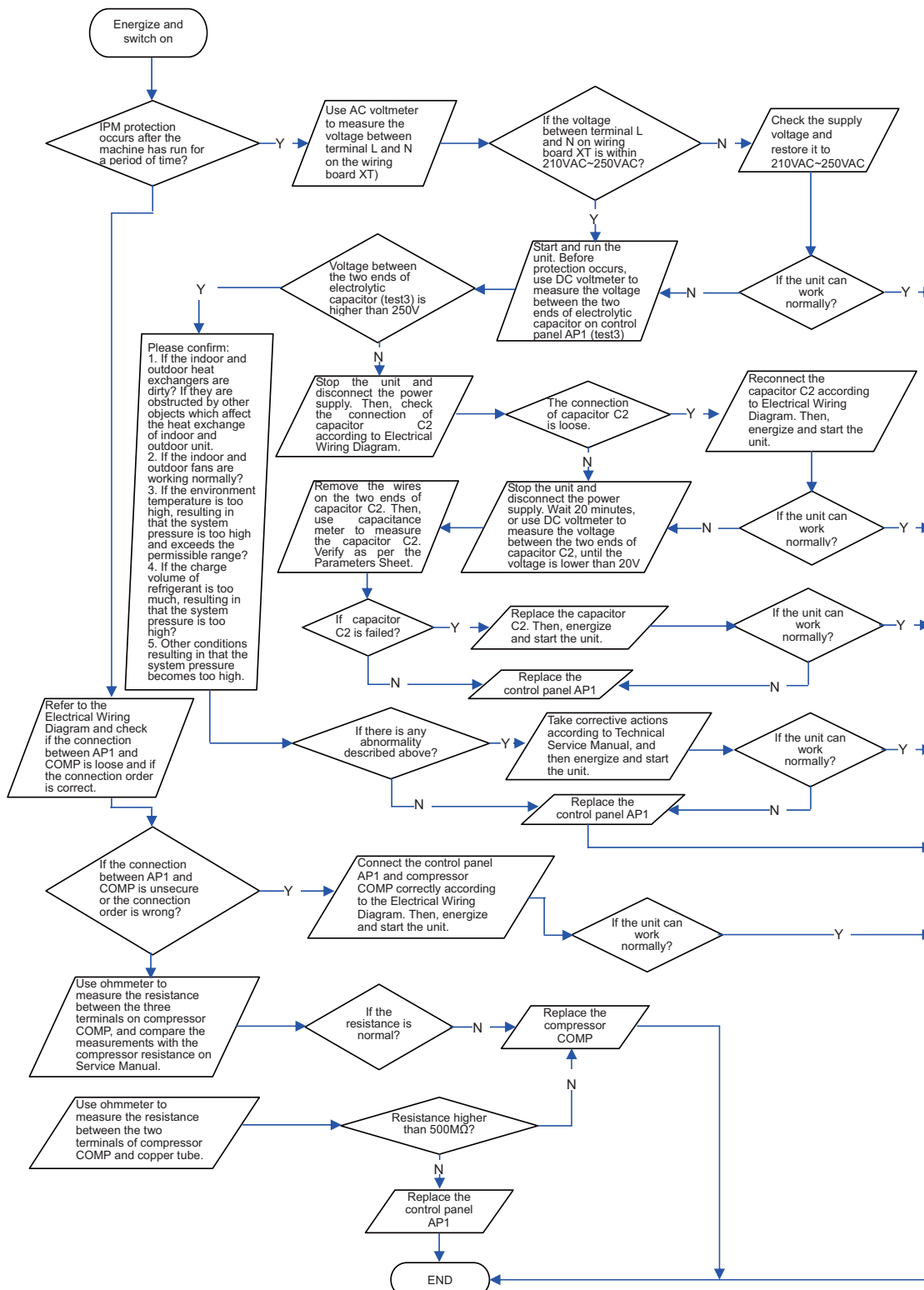


(2) IPM Protection, Out-of step Fault, Compressor Phase Over current (AP1 below refers to the outdoor control panel)

Mainly detect:

- If the connection between control panel AP1 and compressor COMP is secure? If loose? If the connection is in correct order?
- If the voltage input of the machine is within normal range? (Use AC voltmeter to measure the voltage between terminal L and N on the wiring board XT)
- If the compressor coil resistance is normal? If the insulation of compressor coil against the copper tube is in good condition?
- If the working loads of the machine are too high? If the radiation is good?
- If the charge volume of refrigerant is correct?

Fault diagnosis process:



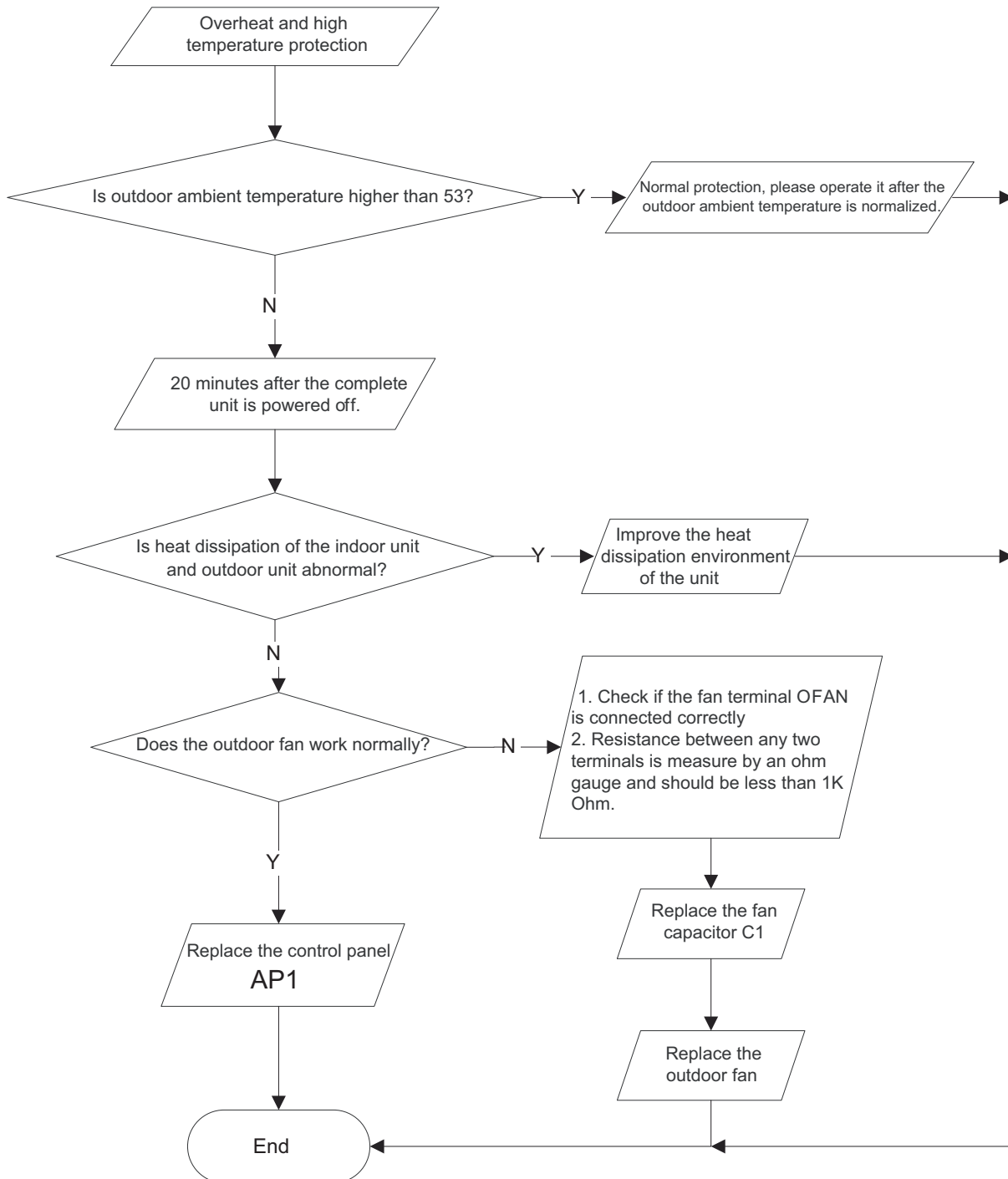
(3)High temperature and overload protection diagnosis (AP1 hereinafter refers to the control board of the outdoor unit)

Mainly detect:

Is outdoor ambient temperature in normal range?

Are the outdoor and indoor fans operating normally?

Is the heat dissipation environment inside and outside the unit is good?



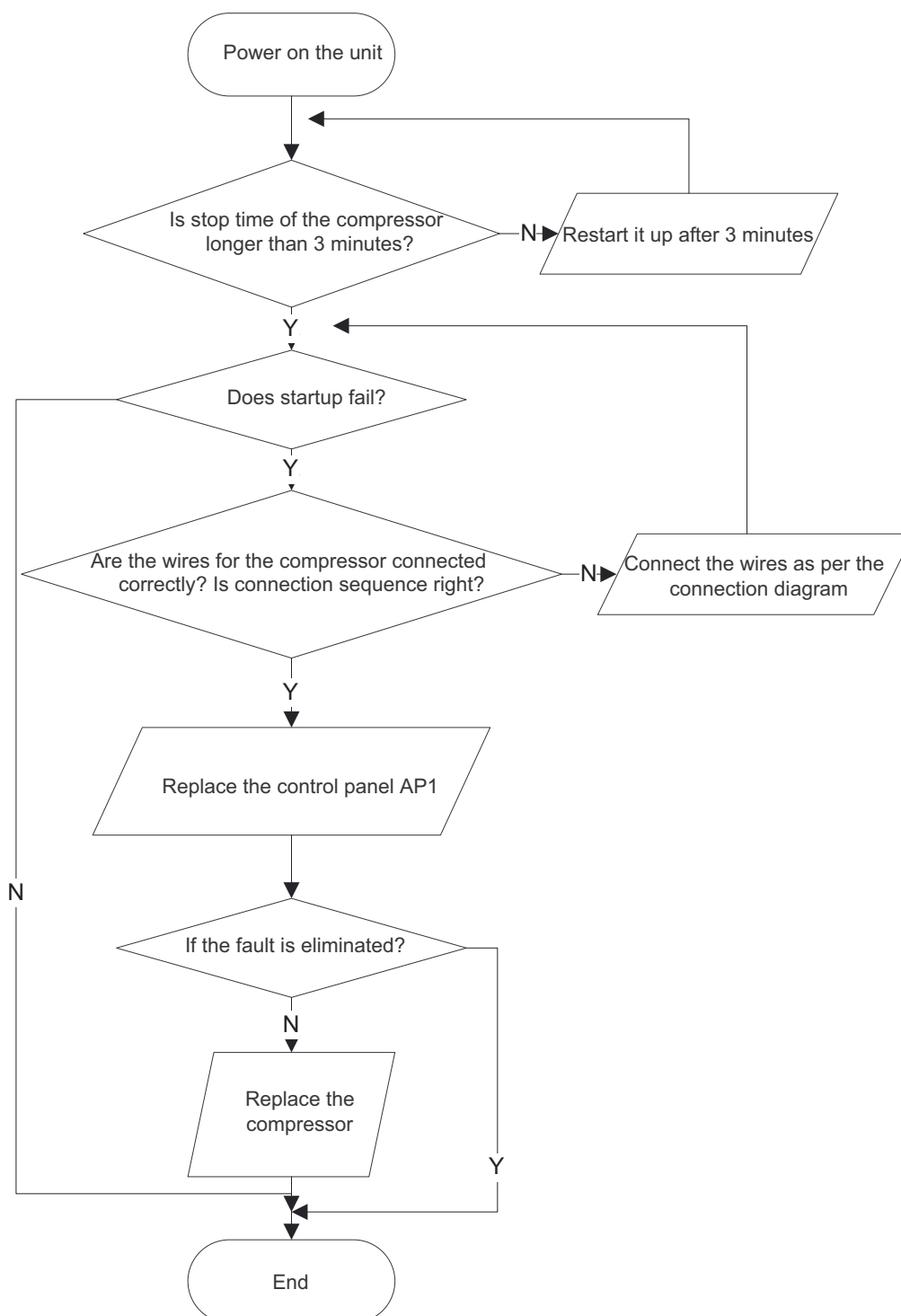
(4) Start-up failure(following AP1 for outdoor unit control board)

Mainly detect:

Whether the compressor wiring is connected correct?

Is time for compressor stopping enough?

Is compressor broken?

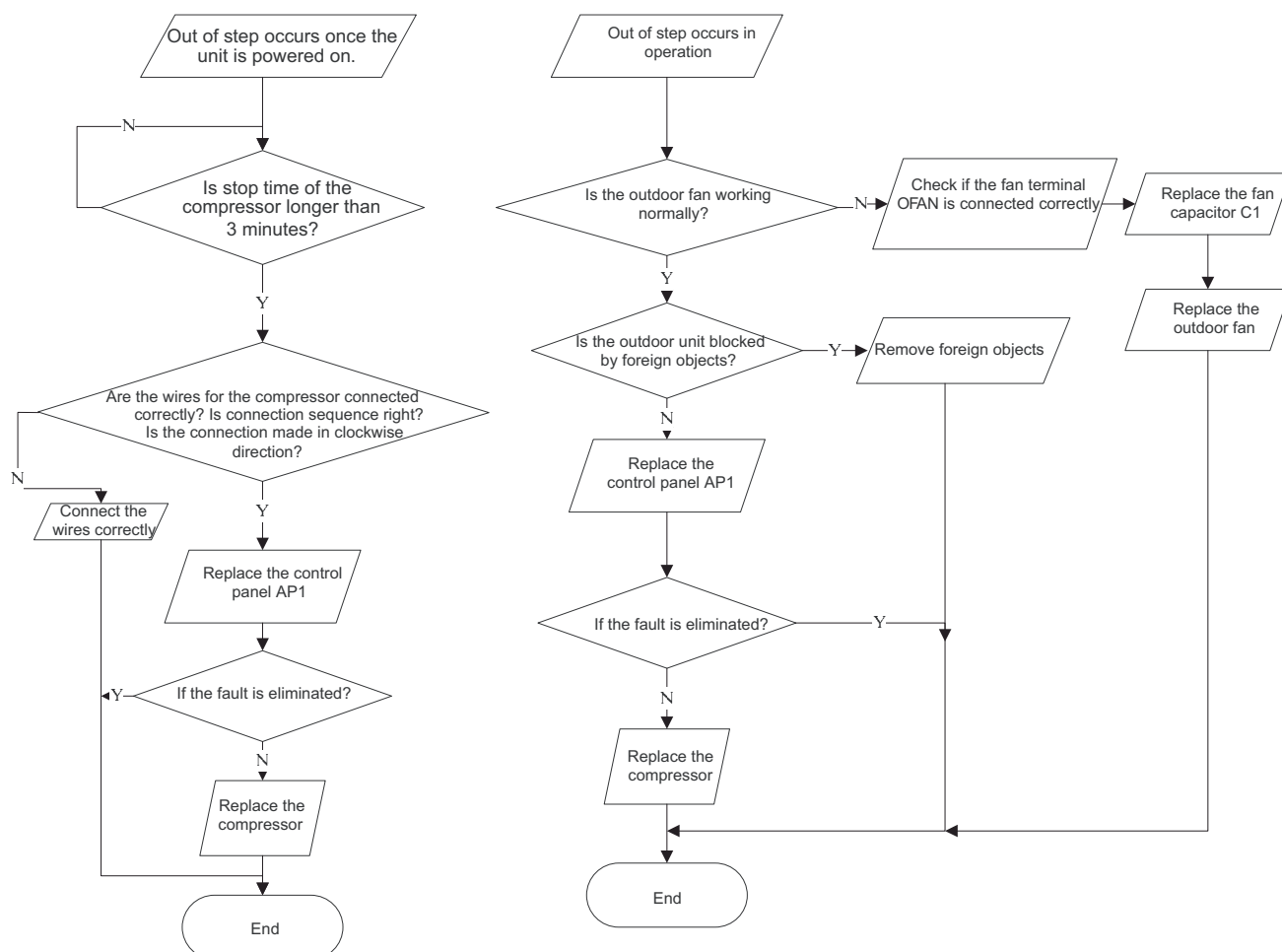


(5) Out of step diagnosis for the compressor (AP1 hereinafter refers to the control board of the outdoor unit)

Mainly detect:

Whether the system pressure is too high?

Whether the input voltage is too low?

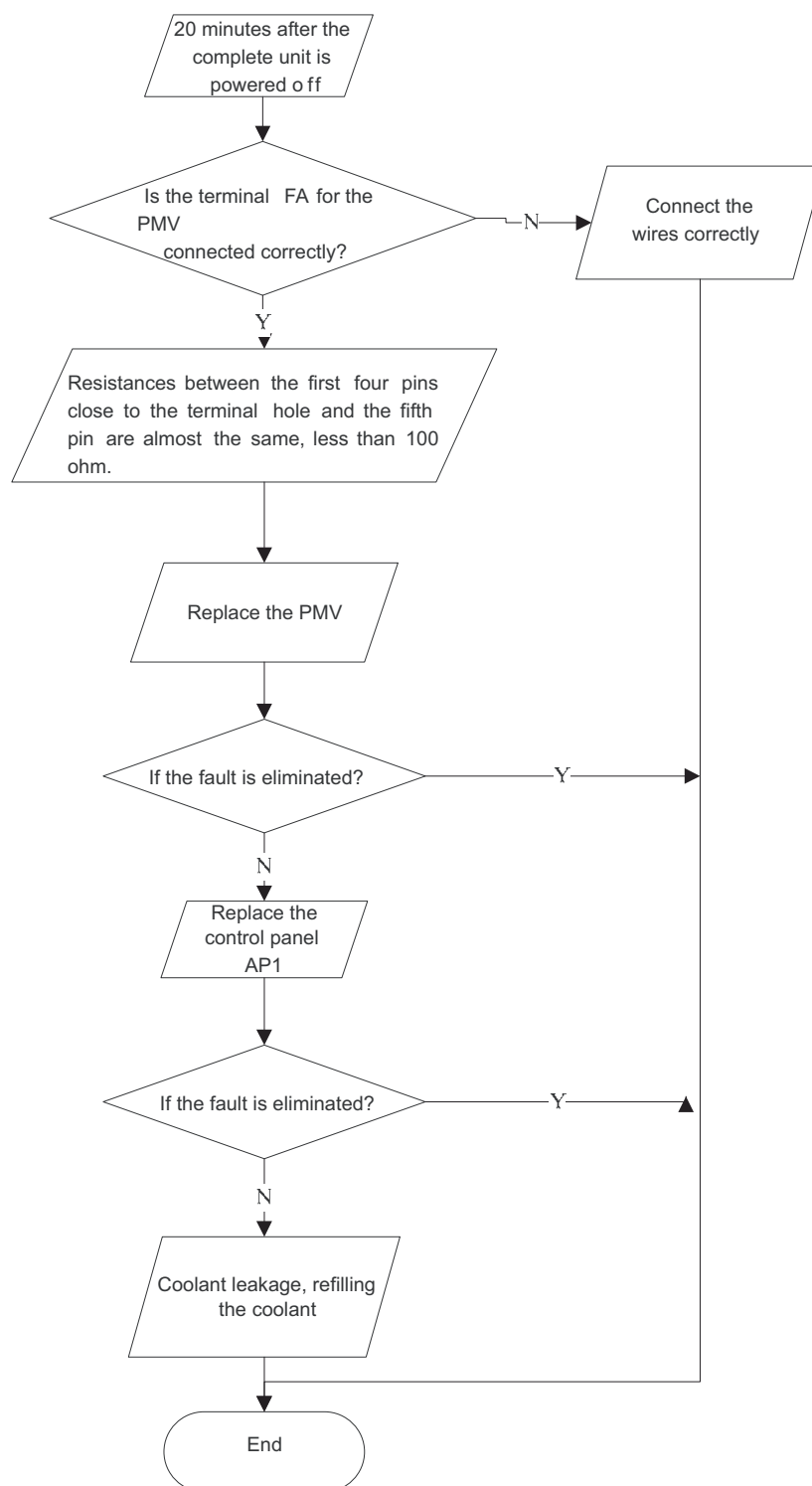


(6) Overload and air exhaust malfunction diagnosis (following AP1 for outdoor unit unit control board)

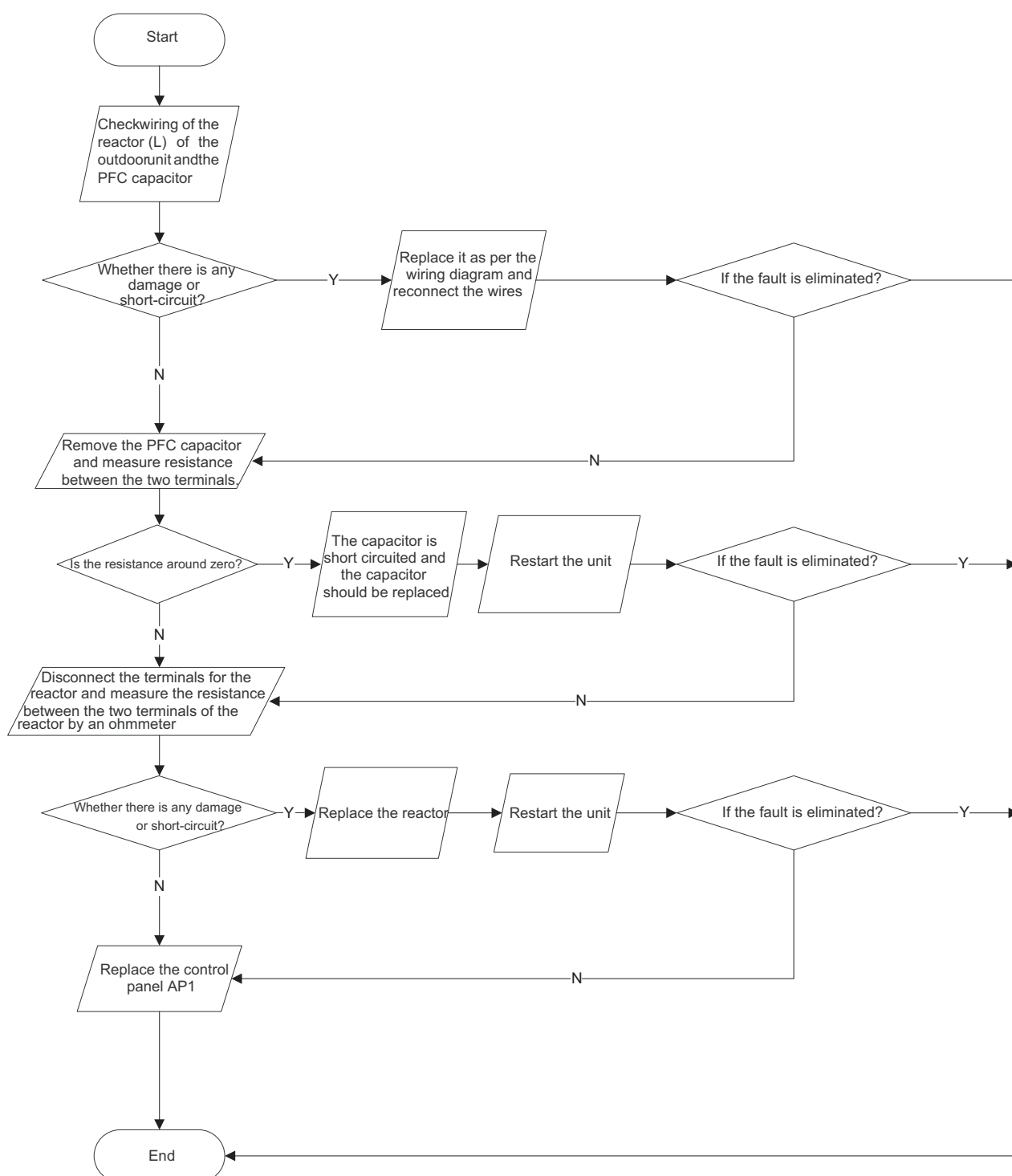
Mainly detect:

Whether the PMV is connected well or not? Is PMV damaged?

Is refrigerant leaked?



(7) Power factor correct or (PFC) fault (a fault of outdoor unit)(AP1 here in after refers to the control board of the outdoor unit)



(8) Communication malfunction: (following AP1 for outdoor unit control board)

Mainly detect:

Detect the indoor and outdoor units connection wire and indoor and outdoor units inside wiring is connect well or not, if is there any damage?

Is there any damage for the indoor unit mainboard communication circuit? Is communication circuit damaged?

The flow chart for malfunction detect:



Appendix 1: Resistance Table for Indoor and Outdoor Ambient Temperature Sensors (15K)

Temp(°C)	Resistance(k Ω)		Temp(°C)	Resistance(k Ω)		Temp(°C)	Resistance(k Ω)		Temp(°C)	Resistance(k Ω)
-19	138.1		20	18.75		59	3.848		98	1.071
-18	128.6		21	17.93		60	3.711		99	1.039
-17	121.6		22	17.14		61	3.579		100	1.009
-16	115		23	16.39		62	3.454		101	0.98
-15	108.7		24	15.68		63	3.333		102	0.952
-14	102.9		25	15		64	3.217		103	0.925
-13	97.4		26	14.36		65	3.105		104	0.898
-12	92.22		27	13.74		66	2.998		105	0.873
-11	87.35		28	13.16		67	2.896		106	0.848
-10	82.75		29	12.6		68	2.797		107	0.825
-9	78.43		30	12.07		69	2.702		108	0.802
-8	74.35		31	11.57		70	2.611		109	0.779
-7	70.5		32	11.09		71	2.523		110	0.758
-6	66.88		33	10.63		72	2.439		111	0.737
-5	63.46		34	10.2		73	2.358		112	0.717
-4	60.23		35	9.779		74	2.28		113	0.697
-3	57.18		36	9.382		75	2.206		114	0.678
-2	54.31		37	9.003		76	2.133		115	0.66
-1	51.59		38	8.642		77	2.064		116	0.642
0	49.02		39	8.297		78	1.997		117	0.625
1	46.6		40	7.967		79	1.933		118	0.608
2	44.31		41	7.653		80	1.871		119	0.592
3	42.14		42	7.352		81	1.811		120	0.577
4	40.09		43	7.065		82	1.754		121	0.561
5	38.15		44	6.791		83	1.699		122	0.547
6	36.32		45	6.529		84	1.645		123	0.532
7	34.58		46	6.278		85	1.594		124	0.519
8	32.94		47	6.038		86	1.544		125	0.505
9	31.38		48	5.809		87	1.497		126	0.492
10	29.9		49	5.589		88	1.451		127	0.48
11	28.51		50	5.379		89	1.408		128	0.467
12	27.18		51	5.197		90	1.363		129	0.456
13	25.92		52	4.986		91	1.322		130	0.444
14	24.73		53	4.802		92	1.282		131	0.433
15	23.6		54	4.625		93	1.244		132	0.422
16	22.53		55	4.456		94	1.207		133	0.412
17	21.51		56	4.294		95	1.171		134	0.401
18	20.54		57	4.139		96	1.136		135	0.391
19	19.63		58	3.99		97	1.103		136	0.382

Appendix 2: Resistance Table for Indoor and Outdoor Tube Temperature Sensor (20K)

Temp.(℃)	Resistance(kΩ)		Temp.(℃)	Resistance(kΩ)		Temp.(℃)	Resistance(kΩ)		Temp.(℃)	Resistance(kΩ)
-19	181.4		20	25.01		59	5.13		98	1.427
-18	171.4		21	23.9		60	4.948		99	1.386
-17	162.1		22	22.85		61	4.773		100	1.346
-16	153.3		23	21.85		62	4.605		101	1.307
-15	145		24	20.9		63	4.443		102	1.269
-14	137.2		25	20		64	4.289		103	1.233
-13	129.9		26	19.14		65	4.14		104	1.198
-12	123		27	18.13		66	3.998		105	1.164
-11	116.5		28	17.55		67	3.861		106	1.131
-10	110.3		29	16.8		68	3.729		107	1.099
-9	104.6		30	16.1		69	3.603		108	1.069
-8	99.13		31	15.43		70	3.481		109	1.039
-7	94		32	14.79		71	3.364		110	1.01
-6	89.17		33	14.18		72	3.252		111	0.983
-5	84.61		34	13.59		73	3.144		112	0.956
-4	80.31		35	13.04		74	3.04		113	0.93
-3	76.24		36	12.51		75	2.94		114	0.904
-2	72.41		37	12		76	2.844		115	0.88
-1	68.79		38	11.52		77	2.752		116	0.856
0	65.37		39	11.06		78	2.663		117	0.833
1	62.13		40	10.62		79	2.577		118	0.811
2	59.08		41	10.2		80	2.495		119	0.77
3	56.19		42	9.803		81	2.415		120	0.769
4	53.46		43	9.42		82	2.339		121	0.746
5	50.87		44	9.054		83	2.265		122	0.729
6	48.42		45	8.705		84	2.194		123	0.71
7	46.11		46	8.37		85	2.125		124	0.692
8	43.92		47	8.051		86	2.059		125	0.674
9	41.84		48	7.745		87	1.996		126	0.658
10	39.87		49	7.453		88	1.934		127	0.64
11	38.01		50	7.173		89	1.875		128	0.623
12	36.24		51	6.905		90	1.818		129	0.607
13	34.57		52	6.648		91	1.736		130	0.592
14	32.98		53	6.403		92	1.71		131	0.577
15	31.47		54	6.167		93	1.658		132	0.563
16	30.04		55	5.942		94	1.609		133	0.549
17	28.68		56	5.726		95	1.561		134	0.535
18	27.39		57	5.519		96	1.515		135	0.521
19	26.17		58	5.32		97	1.47		136	0.509

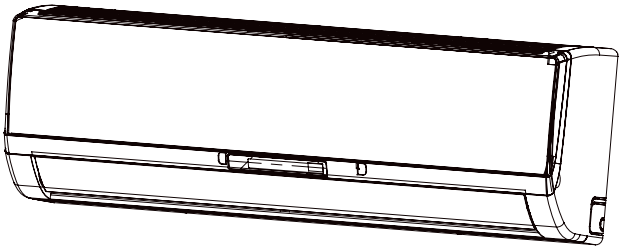
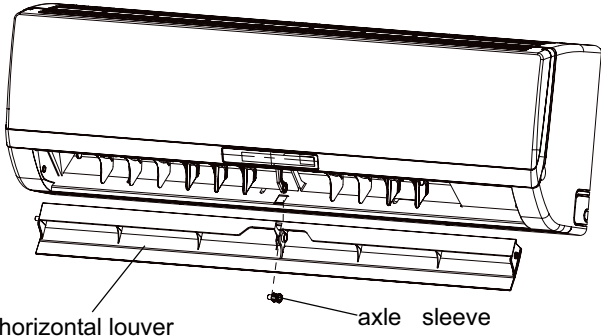
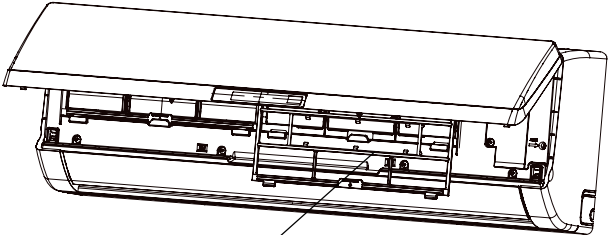
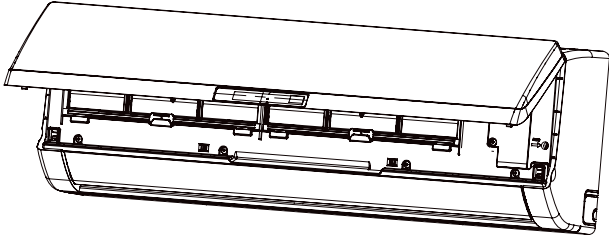
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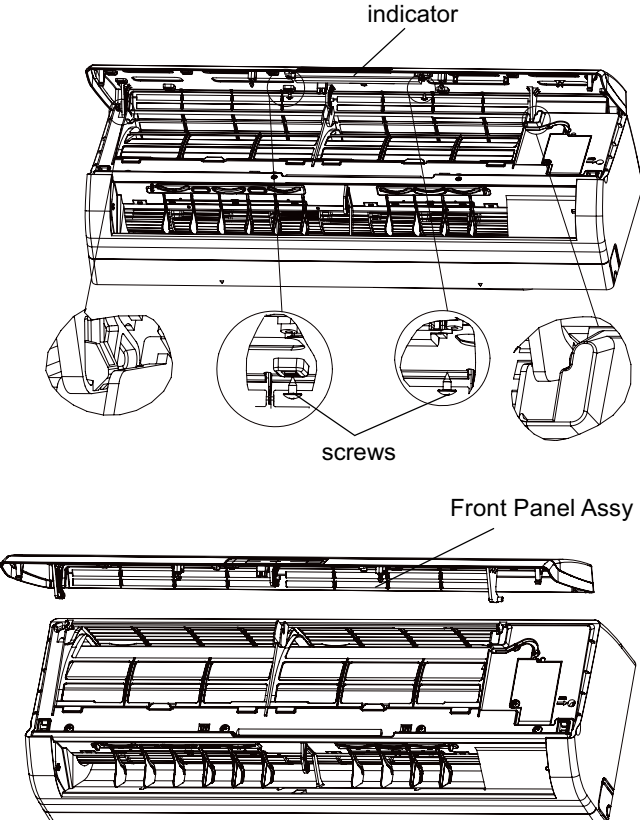
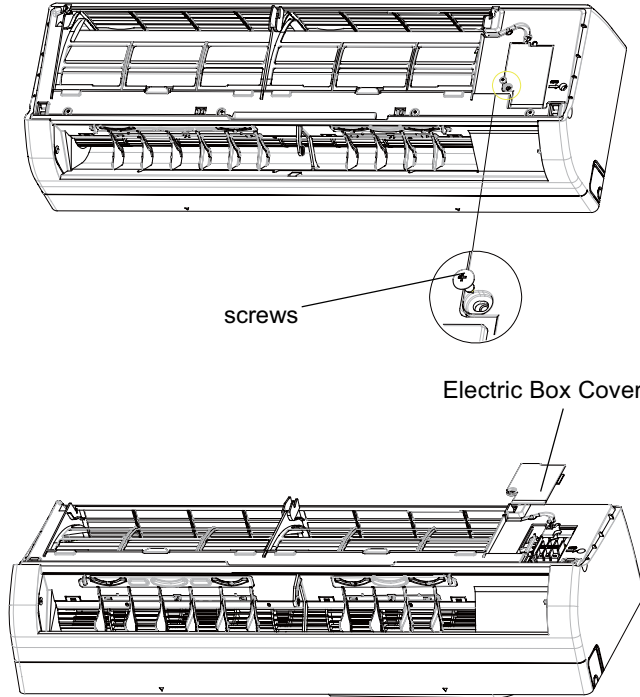
10. Removal Procedure

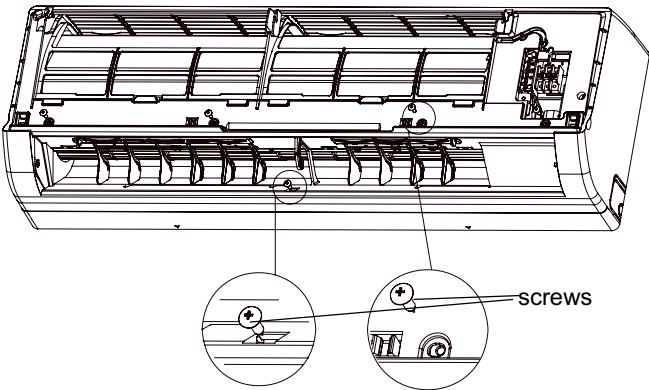
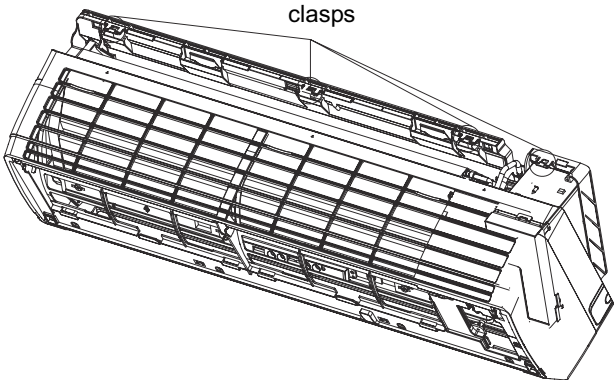
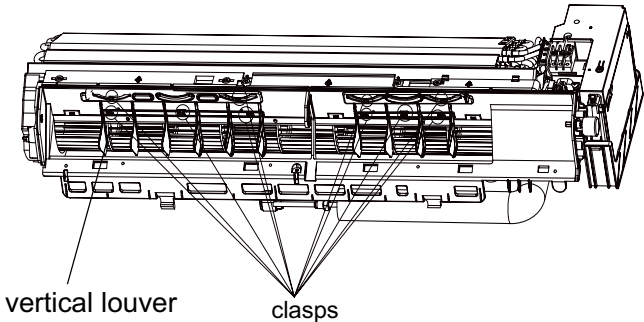
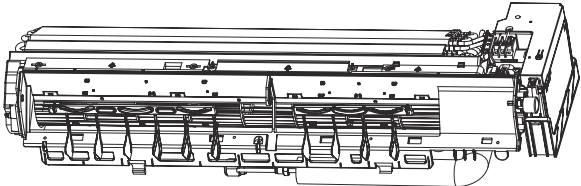
10.1 Removal Procedure of Indoor Unit

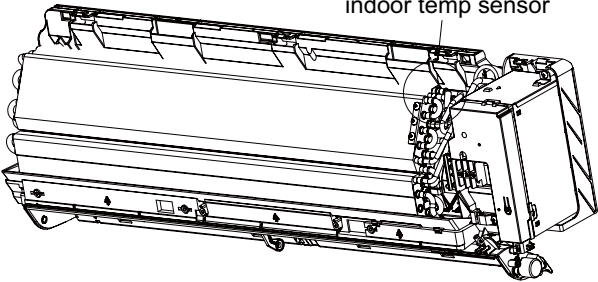
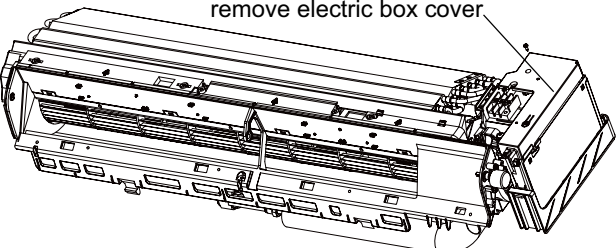
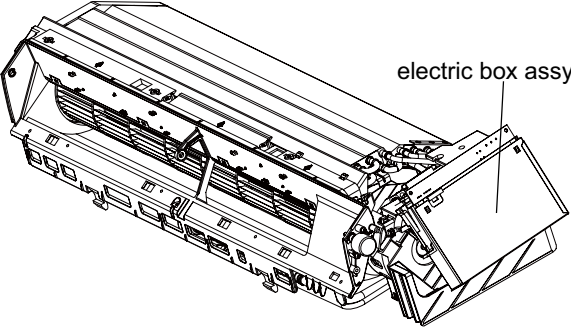
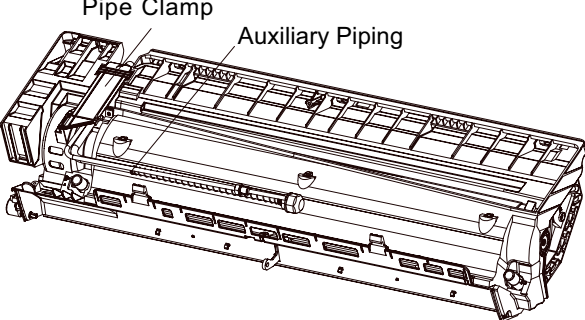
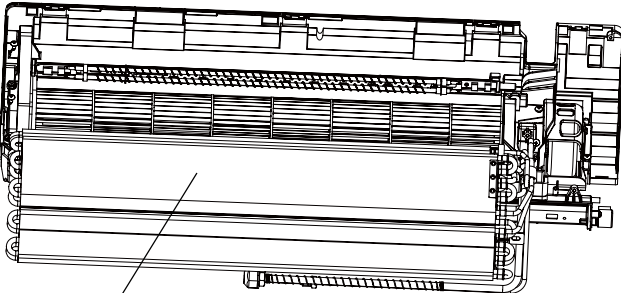
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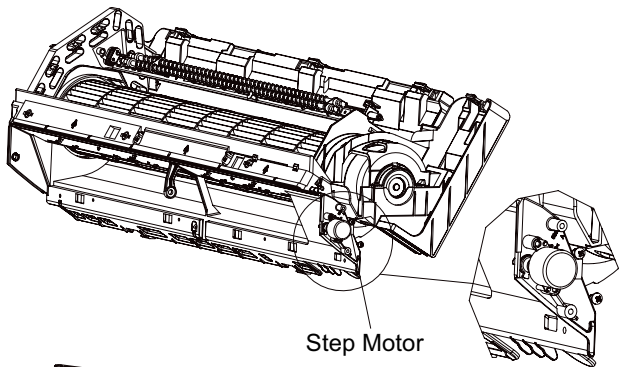
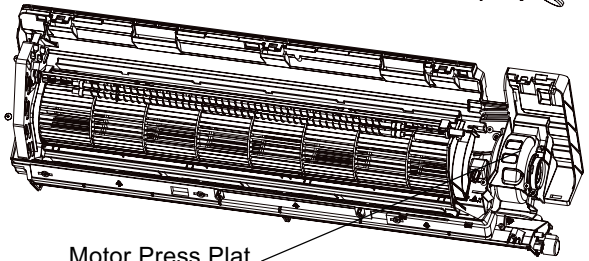
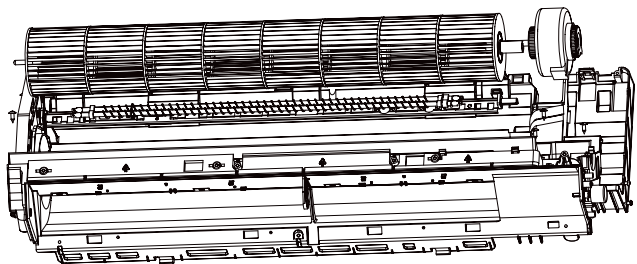
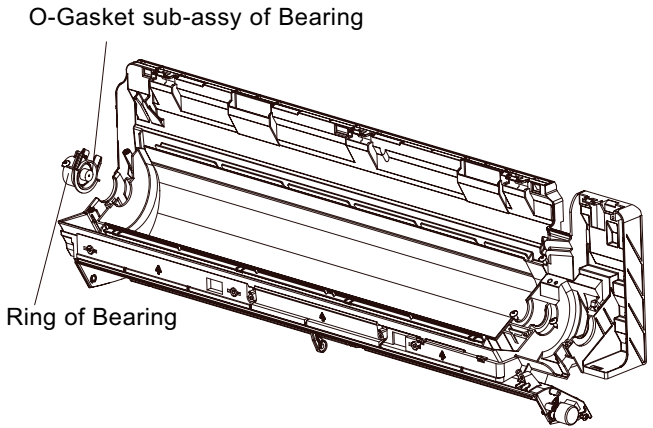
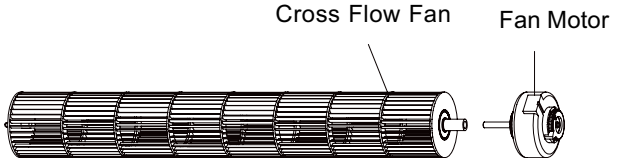
Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

Steps	Procedure	
1. Before disassembly		
2. Remove filter and horizontal louver	<div><div><div>1</div><div>Open the front panel.</div></div><div><div>2</div><div>Push the filter inward and then pull it outward to remove it.</div></div><div><div>3</div><div>Remove axle sleeve of horizontal louver and slightly bend the horizontal louver to remove it.</div></div></div> <div></div>	

Steps	Procedure
3. Remove indicator and front panel	
1	Remove connection screw fixing indicator and then remove the indicator.
2	Remove rotating shaft of front panel from groove. Then remove the front panel.
 <p>indicator</p> <p>screws</p> <p>Front Panel Assy</p>	
4. Remove electric box cover 2	
	Remove connection screws between electric box cover 2 and front case. Then remove the electric box cover 2.
 <p>screws</p> <p>Electric Box Cover2</p>	

Steps	Procedure
5. Remove the front case	
1	<div data-bbox="236 394 644 461">Remove connection screw between front case and the top of rear case.</div> <div data-bbox="817 286 1469 674"><p>screws</p></div> <div data-bbox="105 938 129 963">2</div> <div data-bbox="236 938 651 1088">Open screw cap and remove 3 connection screws. Loosen clasps between front case and rear case. Then remove front case.</div> <div data-bbox="831 842 1449 1220"><p>clasps</p></div>
6. Remove the vertical louver	
1	<div data-bbox="201 1498 719 1572">Loosen the clasps connecting the vertical louver and bottom case subassembly.</div> <div data-bbox="812 1368 1458 1688"><p>vertical louver</p><p>clasps</p><div data-bbox="105 1731 129 1756">2</div><div data-bbox="201 1731 539 1760">Remove the vertical louver.</div><div data-bbox="831 1760 1414 1944"></div></div>

Steps	Procedure
7.	Remove the electric box subassembly
1	<p>Unplug indoor temp sensor</p>  <p>indoor temp sensor</p>
2	<p>Remove connection screws between electric box and rear case. Loosen clasp and remove ground wire and evaporator. Then remove electric box.</p>  <p>remove electric box cover</p>  <p>electric box assy</p>
8.	Remove evaporator
1	<p>Turn over the rear case and remove connection screws between connecting pipe clamp and rear case. Loosen clasps between connecting pipe clamp and rear case. Then remove connecting pipe clamp.</p>  <p>Pipe Clamp</p> <p>Auxiliary Piping</p>
2	<p>Remove connection screws between evaporator and motor clamp. Loosen clasps between evaporator and rear case. Then remove evaporator.</p>  <p>evaporator</p>

Steps	Procedure	
9.	Remove cross flow fan blade and motor	
1	Remove screws of step motor and then remove step motor.	 <p>Step Motor</p>
2	Remove 4 connection screws between motor clamp and rear case. Then remove motor clamp.	 <p>Motor Press Plat</p>
3	Remove cross flow fan blade and motor.	
4	Remove ring of bearing.	 <p>O-Gasket sub-assy of Bearing</p> <p>Ring of Bearing</p>
5	Remove connection screws between cross flow fan blade and motor shaft. Then remove the motor.	 <p>Cross Flow Fan</p> <p>Fan Motor</p>

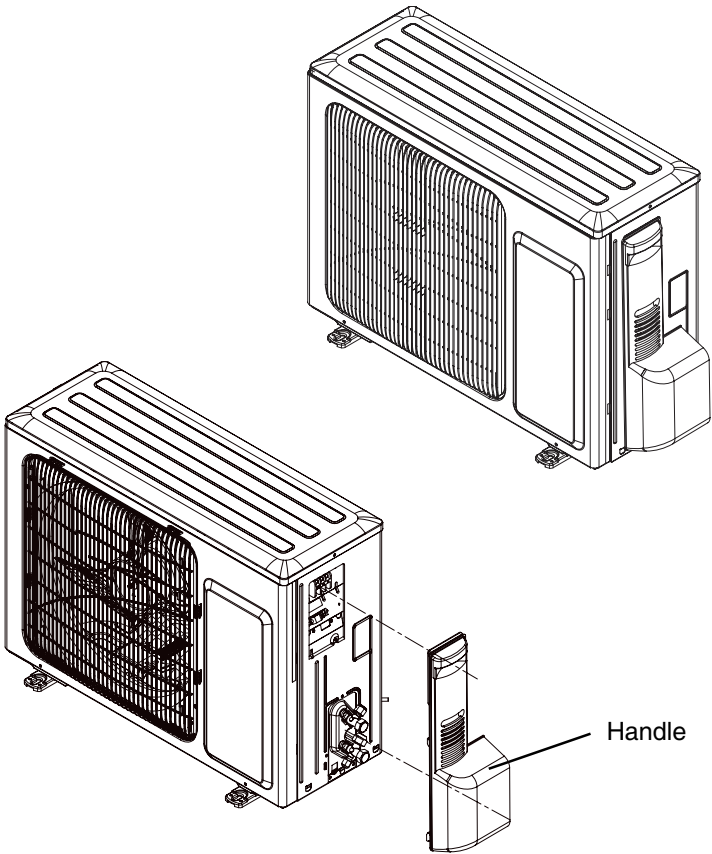
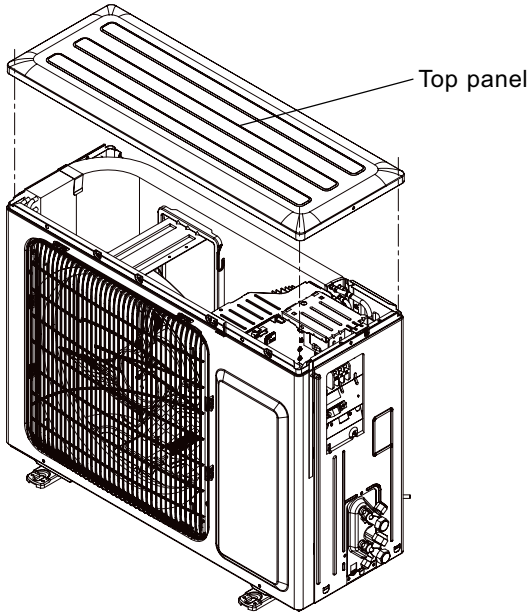
10.2 Removal Procedure of Outdoor Unit

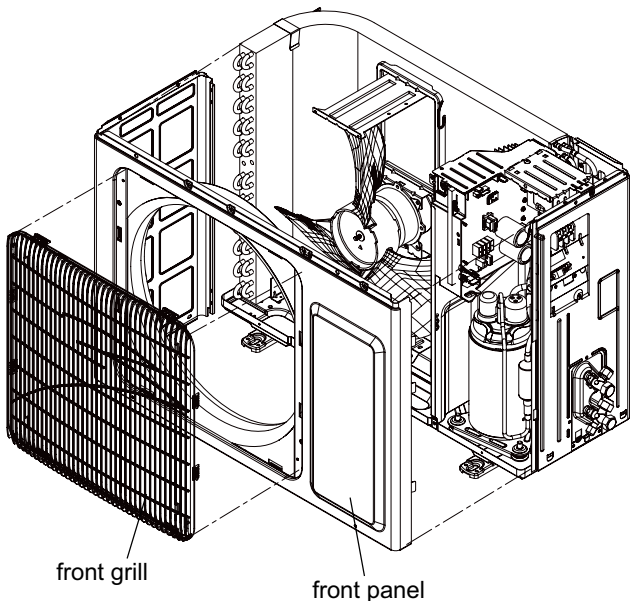
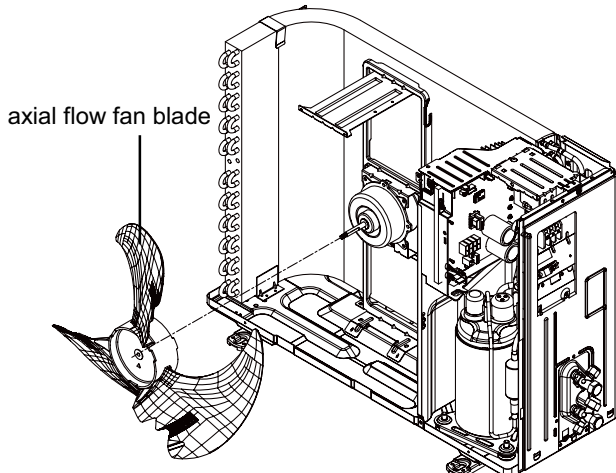
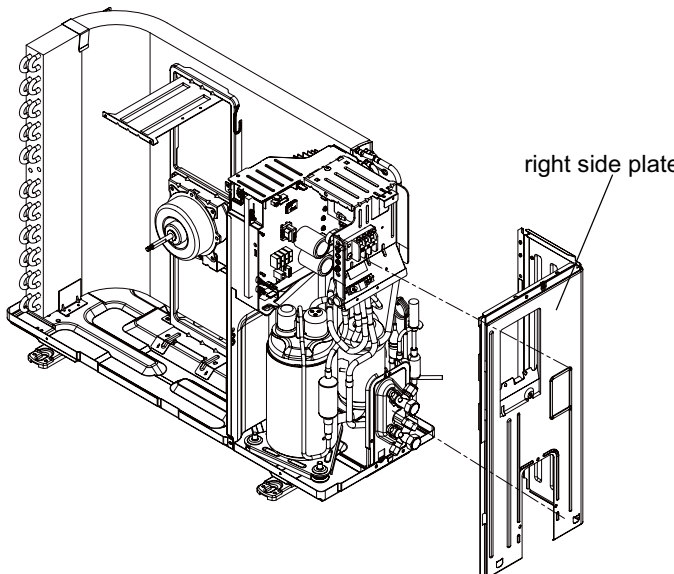


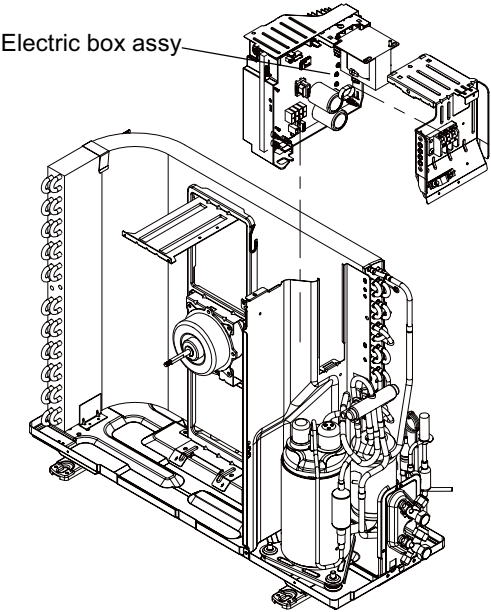
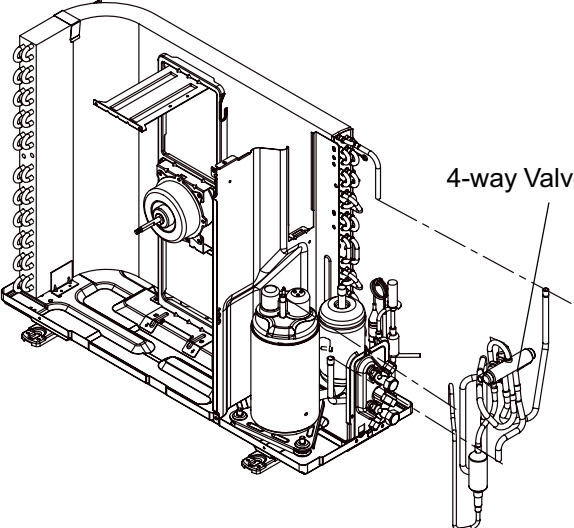
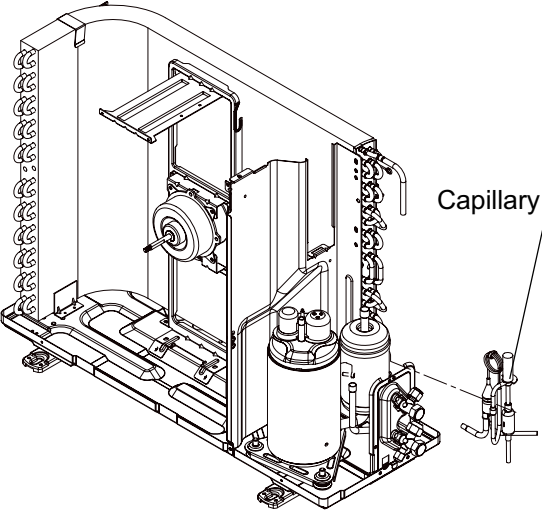
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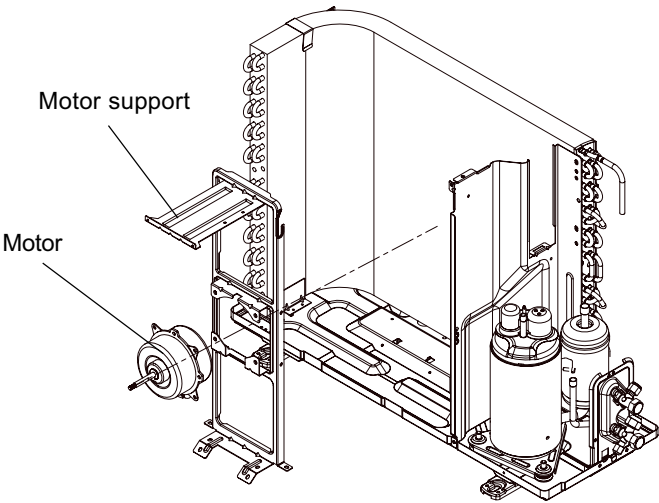
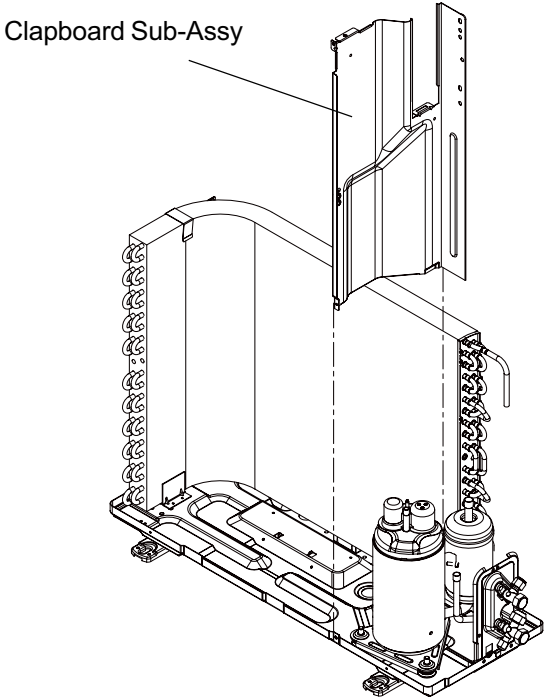
Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

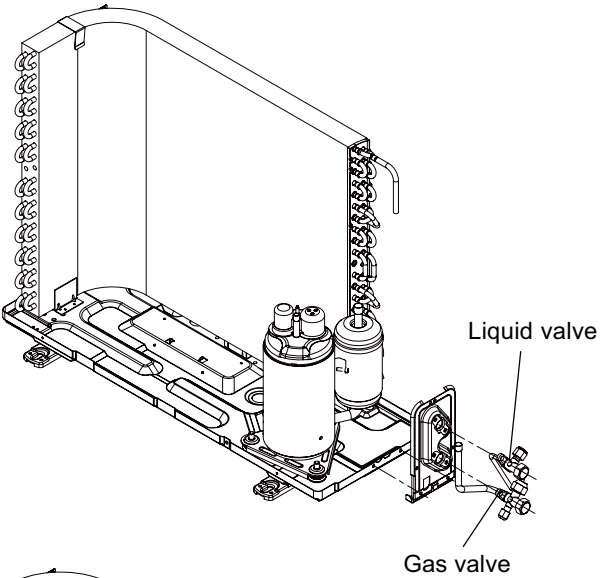
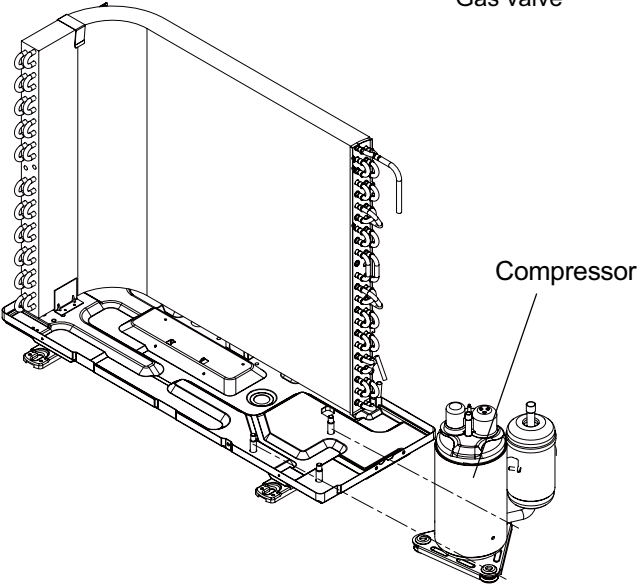
09K Outdoor Unit

Steps	Procedure
1. Remove big handle	
1	Before disassembly
2	Remove 1 connection screw fixing big handle and then remove the big handle.
	
2. Remove top cover plate	
	
	Remove 3 connection screws among top cover plate, front panel and right side plate. Then remove top cover plate.

Steps	Procedure	
3.	Remove front grill and front panel	
1	Remove 2 connection screws between front grill and front panel. Then remove front panel.	
2	Remove 5 connection screws among front panel, chassis and motor support. Then remove front panel.	
4.	Remove axial flow fan blade	
	Remove nut of fan blade, and then remove axial flow fan blade.	
5.	Remove right side plate	
	Remove 7 connection screws among right side plate, chassis, valve support and electric box.	

Steps	Procedure
6.Remove electric box assy	<p data-bbox="248 533 730 663">Remove the 2 screws fixing the cover of electric box. Lift to remove the cover. Loosen the wire and disconnect the terminal. Lift to remove the electric box assy.</p>  <p data-bbox="890 300 1070 327">Electric box assy</p>
7.Disassemble 4-way Valve Assy	<p data-bbox="248 1066 730 1375">Unscrew the fastening nut of the 4-way Valve Assy coil and remove the coil. Wrap the 4-way Valve Assy with wet cotton and unsolder the 4 weld spots connecting the 4-way Valve Assy to take it out.(Note: Refrigerant should be discharged firstly.) Welding process should be as quickly as possible and keep wrapping cotton wet all the time. Be sure not to burn out the lead-out wire of compressor.</p>  <p data-bbox="1286 1088 1493 1115">4-way Valve Assy</p>
8.Disassemble Capillary Sub-assy	<p data-bbox="248 1675 730 1881">Unsolder weld point of capillary Sub-assy, valve and outlet pipe of condensator. Then remove the capillary Sub-assy. Do not block the capillary when unsoldering it. (Note: before unsoldering,discharge refrigerants completely)</p>  <p data-bbox="1278 1671 1493 1697">Capillary Sub-assy</p>

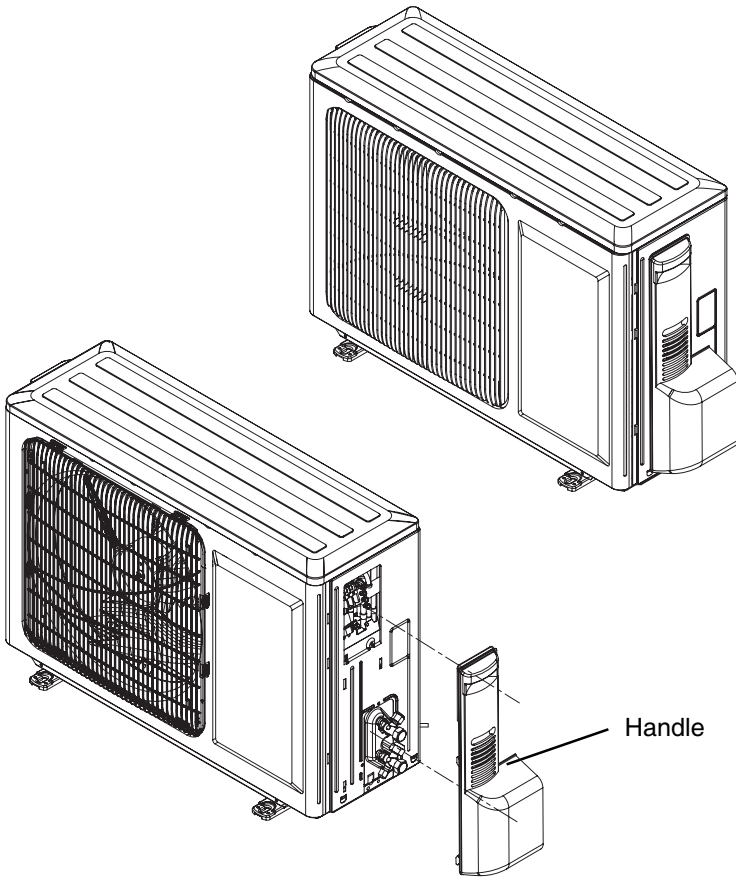
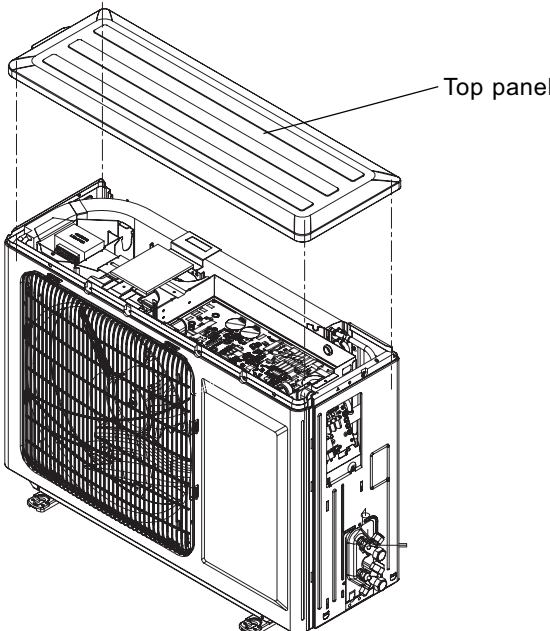
Steps	Procedure
9.Disassemble motor and motor support	 <p>Remove the 4 tapping screws fixing the motor. Pull out the lead-out wire and remove the motor. Remove the 2 tapping screws fixing the motor support. Lift motor support to remove it.</p>
10.Disassemble Clapboard Sub-Assy	 <p>Loosen the screws of the Clapboard Sub-Assy . The Clapboard Sub-Assy has a hook on the lower side. Lift and pull the Clapboard Sub-Assy to remove.</p>

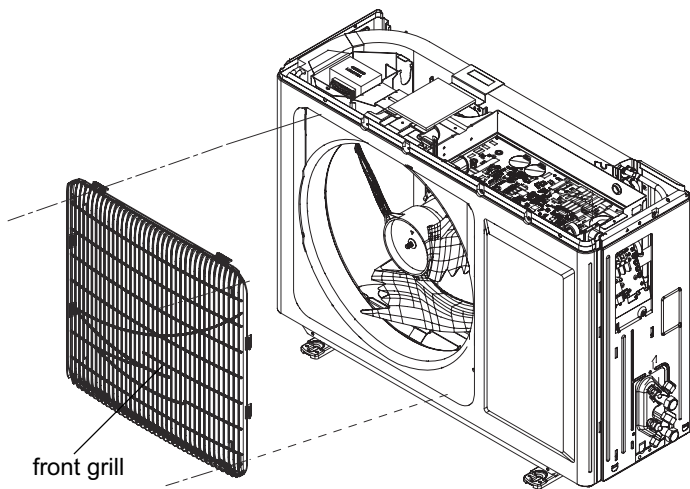
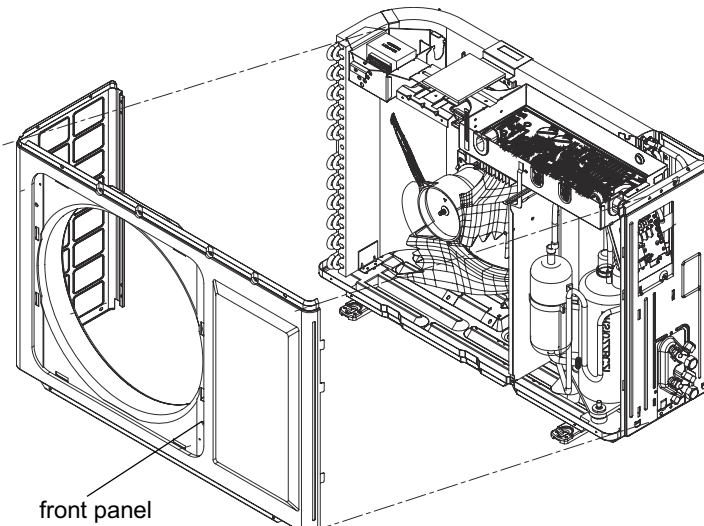
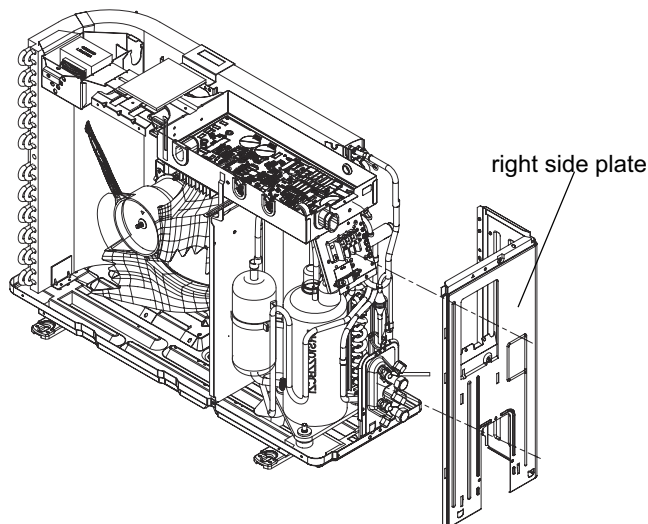
Steps	Procedure
11. Disassemble Compressor	
1	<p data-bbox="217 443 740 725">Remove the 2 screws fixing the gas valve. Unsolder the welding spot connecting gas valve and air return pipe and remove the gas valve. (Note: it is necessary to warp the gas valve when unsoldering the welding spot.) Remove the 2 screws fixing liquid valve. Unsolder the welding spot connecting liquid valve and remove the liquid valve.</p>  <p data-bbox="1347 613 1481 640">Liquid valve</p> <p data-bbox="1283 846 1390 873">Gas valve</p>
2	<p data-bbox="217 1059 740 1122">Remove the 3 footing screws of the compressor and remove the compressor.</p>  <p data-bbox="1321 1122 1469 1149">Compressor</p>

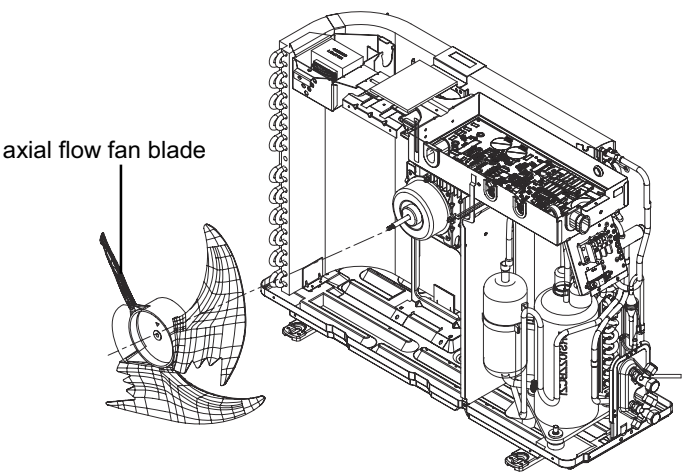
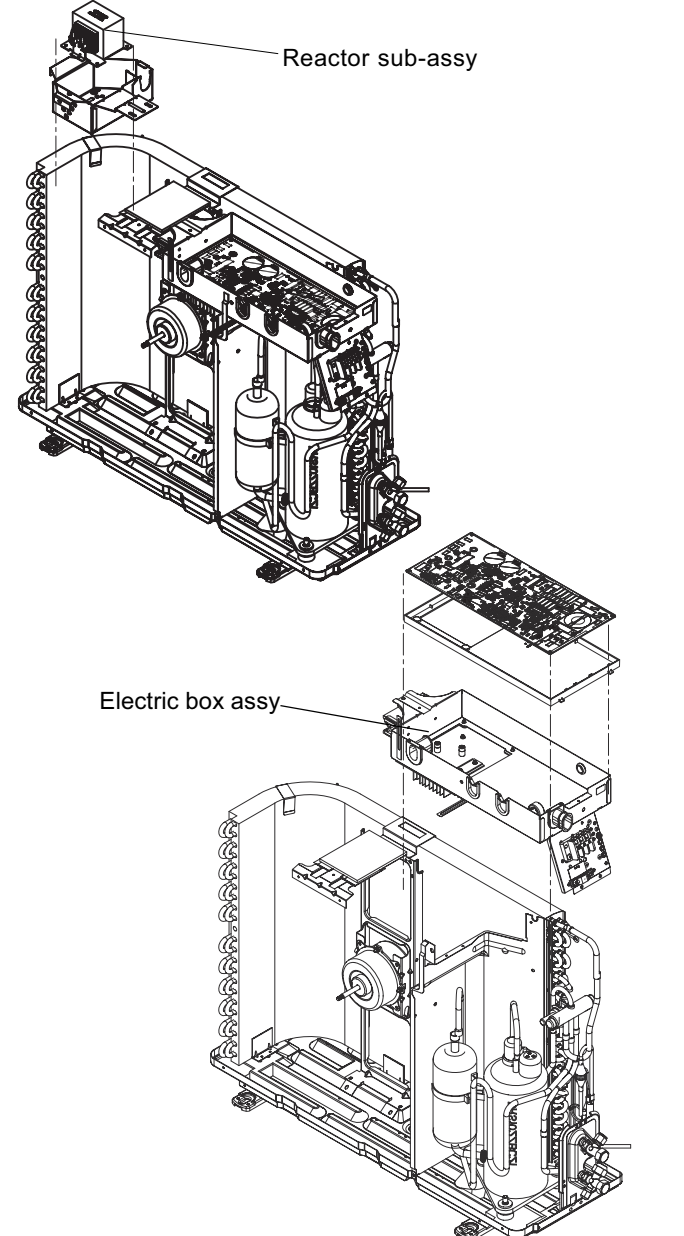
12K Outdoor Unit

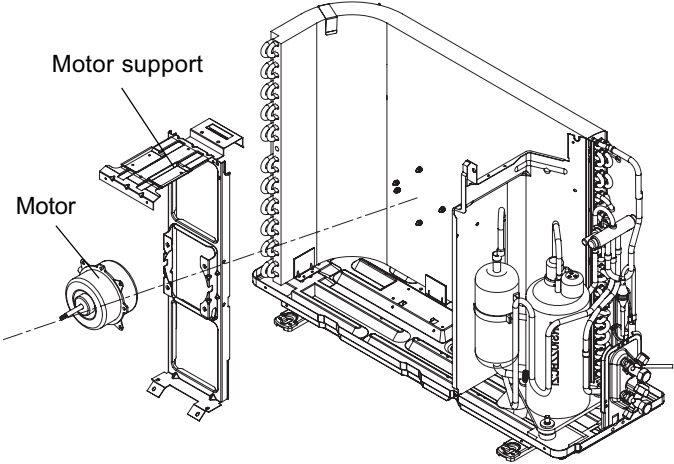
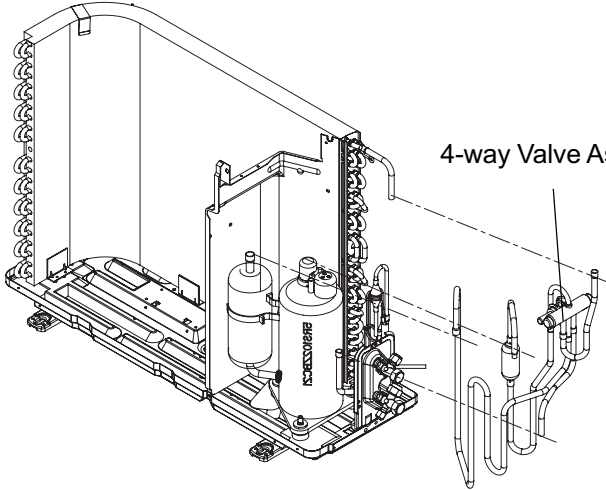
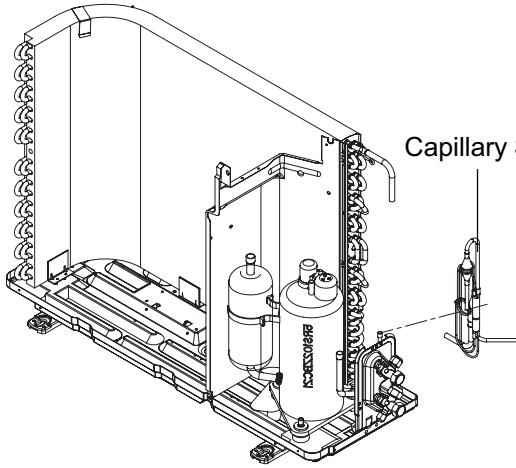


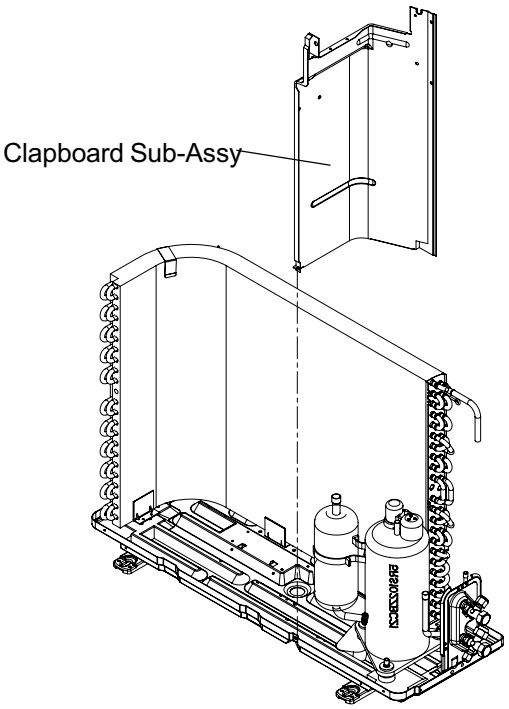
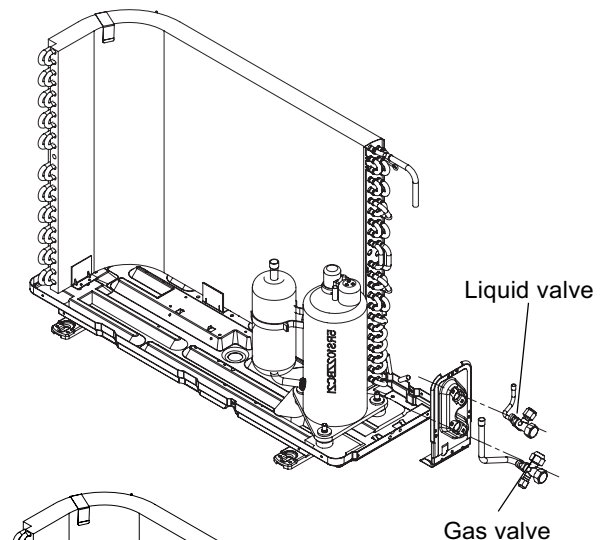
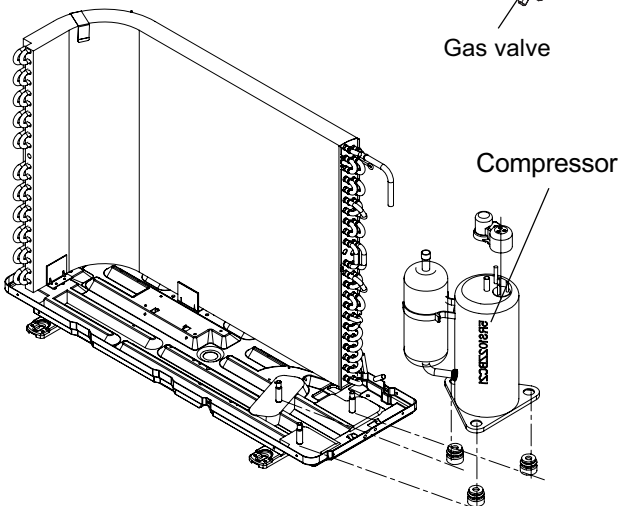
Warning Be sure to wait 10 minutes or more after turning off all power supplies before disassembling work.

Steps	Procedure	
1. Remove big handle		
1	Before disassembly	
2	Remove 1 connection screw fixing big handle and then remove the big handle.	
2. Remove top cover plate		
	Remove 3 connection screws among top cover plate, front panel and right side plate. Then remove top cover plate.	

Steps	Procedure	
3.	Remove front grill and front panel	
1	Remove 2 connection screws between front grill and front panel. Then remove front panel.	
2	Remove 5 connection screws among front panel, chassis and motor support. Then remove front panel.	
4.	Remove right side plate	
	Remove 7 connection screws among right side plate, chassis, valve support and electric box.	

Steps	Procedure	
5.	Remove axial flow fan blade	 <p>axial flow fan blade</p>
	Remove nut of fan blade, and then remove axial flow fan blade.	
6.	Remove electric box assy	 <p>Reactor sub-assy</p> <p>Electric box assy</p>
1	Remove the screws of theReactor sub-assy and then remove it.	
2	Remove the 2 screws fixing the cover of elec- tric box. Lift to remove the cover. Loosen the wire and disconnect the terminal. Lift to re- move the electric box assy.	

Steps	Procedure
7. Disassemble motor and motor support	<p data-bbox="231 465 730 633">Remove the 4 tapping screws fixing the motor. Pull out the lead-out wire and remove the motor. Remove the 2 tapping screws fixing the motor support. Lift motor support to remove it.</p>  <p data-bbox="853 383 1007 409">Motor support</p> <p data-bbox="818 524 879 551">Motor</p>
8. Disassemble 4-way Valve Assy	<p data-bbox="231 1043 730 1350">Unscrew the fastening nut of the 4-way Valve Assy coil and remove the coil. Wrap the 4-way Valve Assy with wet cotton and unsolder the 4 weld spots connecting the 4-way Valve Assy to take it out. (Note: Refrigerant should be discharged firstly.) Welding process should be as quickly as possible and keep wrapping cotton wet all the time. Be sure not to burn out the lead-out wire of compressor.</p>  <p data-bbox="1281 1066 1490 1093">4-way Valve Assy</p>
9. Disassemble Capillary Sub-assy	<p data-bbox="231 1655 730 1861">Unsolder weld point of capillary Sub-assy, valve and outlet pipe of condensator. Then remove the capillary Sub-assy. Do not block the capillary when unsoldering it. (Note: before unsoldering, discharge refrigerants completely)</p>  <p data-bbox="1273 1648 1497 1675">Capillary Sub-assy</p>

Steps	Procedure
10. Disassemble Clapboard Sub-Assy	 <p>Clapboard Sub-Assy</p> <p>Loosen the screws of the Clapboard Sub-Assy . The Clapboard Sub-Assy has a hook on the lower side. Lift and pull the Clapboard Sub-Assy to remove.</p>
11. Disassemble Compressor	 <p>Liquid valve</p> <p>Gas valve</p>  <p>Compressor</p> <p>1 Remove the 2 screws fixing the gas valve. Unsolder the welding spot connecting gas valve and air return pipe and remove the gas valve. (Note: it is necessary to warp the gas valve when unsoldering the welding spot.) Remove the 2 screws fixing liquid valve. Unsolder the welding spot connecting liquid valve and remove the liquid valve.</p> <p>2 Remove the 3 footing screws of the compressor and remove the compressor.</p>



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